“THE FAR EASTERN REVIEW” – CHINESE RAILWAY CONSTRUCTION

A COMPREHENSIVE STUDY OF HISTORICAL REFERENCES WITHIN THE LIFE OF THIS JOURNAL OF THE DEVELOPMENT & CONSTRUCTION OF CHINA’S EARLY RAILWAYS, INCLUDING EXTRACTS OF RELEVANT PAGES (**SECTION 3 of 14**)

BY PETER A. CRUSH

(Note : to view the relative pages of the magazine, scroll down to end of these notes for each volume, respectively)

Volume VIII

June 1911

The Antung-Mukden Railway, this four-plus page article retraces the history of the line which started as a 2ft 6inch gauge military line build by Japanese army engineers during the Japan-Russian war in 1906. Initially the line went from Antung to Shichiaotzu about 30 miles southeast opf Mukden. The line waslater extended to Mukden in 1908 by a Japanese contractor working for the military. The system used some 150 locomotives built by Baldwin. The line remained under the Japanese military control until its tranfer to the SMR. The 188 mile line opened to general traffic in August 1908. An agreement had since been (August 1909) signed with China for the line’s reconstruction to standard gauge.10 photographs of Antung, various stations and track side scenes. 1 sketch map of the railway.

The Hukuang Railway Loan Agreement, Peking had announced the conclusion of the loan agreement for £6 million bearing 5% interest to be divided equally among the four powers. The proceeds were to be used for the construction of the Canton-Hankow & Hankow-Szechuan trunk lines. A British engineer was to be appointed in charge of the Canton-Hankow section, German for the Hankow-Ichang section & an American for the Ichang-Kweichow section. Construction would commence in 6 months and the lines were expected to be complete within 3 years except for the Kweichow section. The loan was to run for 40 years and there was provision for an additional £4 million if needed.

Nationalization of Chinese Railways. An editorial reporting that China's cabinet were strengthening control over the development of Chinese railways.

The Hukuang Railway Loan Agreement A recent dispatch indicated that the loan agreement had been concluded.
Rolling Stock for the Kirin-Changchun Railway, the Tongshan railway shops were constructing six Mogul type locomotives including tenders for this line, as well as two shunting engines, one private car, four composite cars, six brake vans, six 30 ton covered goods wagons, twenty 30 ton low-side cars and a number of other cars.
South Manchuria Railway Insurance, 10 leading insurance companies had agreed to cover freight risks in various warehouses of the railway.
European Connections with Peking, a scheme was proposed for connecting Paris with Peking.
Kowloon-Canton Railway, total receipts for the British Section for April had amounted to $12,162.
Shensi-Honan Railway, the earthwork for a distance of 26 miles from Luyang in Honan had been completed of this 160 mile line.
The Ichang-Wanhsien Railway, a report that 30,000 men were employed building this line and that construction trains were working out of Ichang for several miles. The mountainous line was expected to take 15 years to complete.
Kirin-Changchun Railway, the estimated outlay for the current year was ¥500,000 to cover road & building construction and rolling stock. There were two 78 ton and two 38 tons locomotives in use on the line with various wagons.

July 1911
Coaches Built at the Woosung Shops for the Tientsin-Pukow Railway, 3 small illustrations of two coaches and one 4-6-0 passenger locomotive. The coaches had been built at Woosung and the locomotive supplied by Hannoversche Maschinenbau. The main dimensions of the locomotive are provided.
The Nationalization of Chinese Railways, this editorial comments on a Peking edict which had been issued in regard to the nationalization of all China's trunk lines. Peking appeared, in spite of Provincial opposition, to had the resolve to go ahead with this plan in an October conference, which had been called. The editorial supported the notion that Peking was justified in view of the failure of the Provinces to buld their sections of the Canton-Hankow Railway. Much money had been raised by the sale of shares but little railway had been built with much the funds had been siphoned off in corrupt deals by the officials. The Kiangsu and Chekiang Railways had been the exception with their affairs handled with honesty. It was not to be expected that the Government should pay all stockholders for their losses. It was fair that the Government should only pay a fair value for property and assets taken over.
Mukden-Vladivostok Line A report that China had approved this Russian proposal.
British Engineer for Hupeh-Hunan Ry. A. H. Collinson had been appointed Engineer-in-Chief for this section of the Canton-Hankow Railway.
Chinese Eastern Railway, a report indicting income for the year was ¥17 million against expenditure of ¥15.7million.
South Manchurian Railway, net operating revenue for the last half year was reported as ¥3.075 million.
The Shangtung Railway Co., the report for 1909 showed an increase in revenue from $3.4 million to $3.7 million.
Szechuan Railway Redemption Loan, the Peking Government was prepared to take the provincial company and would raise a foreign loan of 10 million Taels for the purpose.

Chinese Managing Directors Appointed, Peking had advised that Wang Hsiao Cheng was being considered for appointment as MD of the Hupeh section, Li Pao Hsun MD of the Hunan section,Yew Liang MD of the Szechuan section and Feng Ko Chun MD of the Canton section. The appointments were to be approved by Director-General Tuan Fang.
Changchiakao-Kulun Railway, the survey for this line was said to have been completed.
A.H.Collinson M. Inst C.E., a photograph of Collinson, who had recently been appointed Engineer-in-Chief of the Hunan-Hupeh section of the Canton-Hankow Railway.

August 1911

The Violation of the "Open Door" by China. A long full 17- page editorial by th Publisher Geo. Bonson Rea about the politics of China's so-called "Open Door" and in reality American railway material manufacturers had bee locked out. Richly illustrated with large portraits of important Qing dynasty officials . 18 photographs including Chief representatives of the foreign banks involved in Chinese loans.
Connecting Shanghai-Nanking and Shanghai-Hangchow Railways A report that a plan was underway to connect these lines at a short connecting line.
The Kilin-Changchun Line A report that more funds were required to complete this line.
Tientsin-Pukow Traffic. The passenger service on the Tientsin-Chinan (Jinan) section had increased to a daily train.
Chinese Railways to be Nationalized The "Sinwanpao" newspaper had published a list of lines to be included in nationalization plans.

September 1911
The Development of the South Manchuria Railway Co., this 9-page article contains a synopsis of the history of the South Manchuria Railway Company. Japan had acquired the railway and territory under the peace treaty between Japan and Russia in 1905. A Japanese Imperial Ordinance was passed in 1906 establishing the company and appointing a board of directors. The authorized capital of the company was ¥200 million with the Japanese Government owning one half of the shares. The other half were made available to Japanese and Chinese subjects. On 1st April 1907 the company formally took possession of all the railway properties including the Port Arthur branch (39 miles), Dairen-Changchun line (437½ miles), the Liushutun branch (3½ miles), Yingkou branch line (13 miles), Yentai branch line (9¾ miles), Fushun branch line (39 miles) and the Antung to Mukden line (189 miles). The gauge of these lines at the time was 3ft 6in. except for the Antung-Mukden line which was 2ft 6in. Immediately after acquisition regauging to standard gauge was implemented with this being accomplished without disruption to traffic. The main Dairen-Suchiatun line was also double-tracked, the whole being completed in 1907-1909. In October 1908 a new express service of Pullman sleeping and dining cars was commenced between Dairen and Changchun with through traffic agreements drawn up with Chinese and Korean railways. The reconstruction of the Antung narrow gauge lines was also commenced in 1909 with the whole expected to be completed by March 1912. The Yingkou branch line had also been extended from the original terminus at Niucjiatun to a new Japanese town being built at Yingkou. Since the re-gauging had been completed the narrow gauge locomotives and rolling stock had been shipped back to Japan during 1908. The new statndard gauge lines currently had some 216 locomotives, 2,315

goods cars and 125 passenger coaches. To cater for the maintenance a new large workshop was being equipped at Shahokou near Dairen. When completed this shop would permit the reapair of 20 locomotives and 46 goods wagons at one time. Passenger and goods traffic on the railway had been steadily increasing. 22 photographs of stations, hotels, trains, carriages, personnel and other scenes. 1 small sketch map of Dairen.

Tangshan Engineering College A five-page comprehensive description of the new railway engineering college at Tongshan(Ttangshan) established by Imperial Chinese Railways in 1905. Classes had started in 1907 with a total of 120 English-speaking Chinese students who had been examined for their proficiency in Hong Kong, Shanghai and Tientsin. 10 photos of the college buildings, facilitiies and the college's first president Dr. Samuel. S. Young (Hsiung Ch'ung-Chih 熊崇志) , a Cantonese native, who had been educated at California and Columbia universities.

Imperial Taiwan Railways, this 4-page article starts with a brief history of the railway which first commenced operations on a 12 mile stretch in 1889, having been built by the Chinese Governor, Liu Ming Chuan (successor to Governor Ting, who had first advocated the line). By the time the Japanese seized Formosa in 1895, 62 miles had been built although this was poorly maintained and the Japanese were compelled to rebuild the line. Under the Japanese the line became Imperial Railways of Taiwan and by 1908 the railway had reached to the southern port of Taokow, a distance of some 246 miles. Extensions were also built from Daitoku to Tamsui and Taokan with Kukiyodo. The report for 1908-1909 showed the railwy in good condition with revenue surplus. 54 locomotives, 112 carriages and 826 wagons were in operation. By 1910 the revenue surplus had increased to ¥1.81 million and plans were in hand for two new branches: the 60 mile Taito line was to run along the southeastern coast and the Arisan (Alishan) 41 mile line was to start from Kagi and tap the camphor-tree district of Mount Ari.. Besides the main railway, Taiwan was also reported to have 45 miles of tramway open to the public with more under construction. 19 photographs of officials, stations, Osaka Kishsa Seizo Kaisha & Balwin locomotives, carriages, bridges and other track-side scenes,and, a chart showing statistics for the years 1900 to 1910.

October 1911

Opening of the Chinese Section, Canton-Kowloon Railway. A six-page report about the official opening of this completed line on 4th October 1911. 18 photographs and one route map, many of which (but not all) are repeats of photographs in May 1911 edition.

Changsha-Chuchou Section Opened, On 10 September a special train made a through trip from Changsha, Hunan to Chuchou, a distance of about 35 miles. The journey took about two hours.

Standard Gauge for Formosa, plans existed for the widening of the gauge of Imperial Taiwan Railways to standard gauge and to double track the Keelung-Taipeh section.

Railway Materials Imported into Formosa, trade reports for 1910 indicating the imports of rails from various countries.

Railway Conference at Peking, the Ministry of Posts & Communications had sent a circular to all railways in China announcing a conference in Peking on October 22 at which standardization of construction, equipment and methods of administration and operation would be discussed.

Through Traffic from Hong Kong to Canton, tariff rates for 110 mile journey had been set at 1st Class $5. 2nd Class $2.50 and 3rd Class $1.25.

The Canton-Hankow Railway, A.H. Collinson had inspected the American survey of the route from Wuchang to Yochow made by Parsons for the China-American Development Co. and had recommended it with slight changes. The section was to be 150 miles in length.
Chefoo's Railway Connection, the abandonment of the Chefoo-Weihsaw railway had led to discussions for a substitute line from Chefoo to the Tientsin-Pukow line at Tsining.
Kiachow-Yichow Line, the Deutsche-Asiatische Bank were understood to have arranged a loan for this line, which if built would compete with the Haichow-Hsuchow line.
Damage from Floods, recent heavy rains had caused flood damage throughout the region. The IRNC had experienced disruptions to traffic and in Manchuria the Liao River had carried away an embankment.
Shaho River Bridge, the contract for construction of this bridge for the Peking-Mukden line had been given to the South Manchuria Railway Co.
Additional Loans Proposed, the Chinese ministry had presented a memorial requesting additional loans of 30 million Taels from international syndicates for redeeming private railway interests.
Tuan Fang's Proclamation to the Szechuanese, This is a verbatim translation of the Imperial Railway Commissioners, (Tuan Fang) proclmation to the people of Szechuan who had been demonstrating against the government's intention of nationalizing the railways. The decree warns the people of allowing rebels and bandits to take advantage of the situation and calls for no more disturbances. He begs the people to allow the railway to be built with foreign help without which, he predicts, it will not get built. He explained that the troups he had brought with him to Szechuan were only for the purpose of suppressing bandits and the government had no intention of robbing the people of their shares in the railway.
Hupeh Railway Surveys, the Director-General Tuan Fang had reported that a re-survey of the route had changed the mileages from Wuchang to Yochow as 190 miles, Kuangsi to Fancheng 130 miles and Hsiangyang to Shasi 207 miles.

November 1911
Types of American Locomotives Popular in the Far East, This is a general article about the formation of the American Locomotive Company (ALCO) in 1901 by the amalgamation of the Schecectady, Brooks, Pittsburgh, Richondmond, Cookes, Rogers, Manchester, Dickson and Rhode Island locomotive works. It describes a number of exports by ALCO to the Far East in recent years, including a consignment of nine 4-6-0 locomotives shipped for the Chosen (Korean) lines of Imperial Govt Rlys of Japan.Also described are 2-8-0 and 4-6-2 locomotives supplied to the South Manchuria Railway and a 2-6-2 sidetank locomotive built for the Canton-Hankow (Yueh Han) railway, one of six. Eight photographs of ALCO engines for China, Chosen, Brazil, & South Africa.

December 1911
The Kwangtung Section of the Canton-Hankow Railway, This article includes a short history of the background to the building of this railway, staring with American investors who were eventually persuaded to pull out, having only completeed the short Canton (from Shek Wai Tong) to Sams Shui branch line of 32 miles and some partial earthworks for the main line north of Canton.The American company eventually received 6.75 million dollars for the work done which was acquired by a new venture, "the Kwangtung Merchantile Administration of the Yuet-Han Railway Company". In 1909 a

call was put out for a second payment on the existing shares, many of which had been purchased by even coolies and other "low class" shareholders. The reported envisaged difficulties in collecting this additional money.Under the company rules only a Cantonese could be emplyed as Engineer-in-Chief as well as board members. Foreign engineers could be employed by the Chinese Chief Engineer in recognition that they could not manage without foreign assistance. Initially Canadians were favoured (from the Canadian Pacific Rly) but most soon left the line and other nationals were then employed, 5 Japanese, 3 American & 1 English engineers plus an American motive power superintendent at the time of writing. All other officials including storekeeper, accountant, Secretary, drivers, guards, stationmasters and platelayers etc were Cantonese.The late President of the Company, Sir Liang Cheng Tung, having been appointed ambassador to Berlin, had been succeeded by HE Jeme Tien You who was also Consulting Engineer to the Board of Posts & Communications and Director of the Peking-Kalgan Railway. The line itself was 4ft 8.5in. and the length to be constructed in Kwangtung Province is 240 miles. 58.5 miles were open at the time of writing and a furthet 54 miles under construction, following the original survey by Barclay Parsons of the original American company. the line started at Wong Sha and ran due north to Shek Pie Hang where it touched the North River at mile 54.9. There were several bridges of 60ft spans and at Kong How, mile 51, was the largest bridge constructed so far with a single span of 200 ft and two more of 30 ft deck girders. The 200 ft span was of the whipple type and designed by Baker and Hurtzig of London. There were also other briges of one or more 60 ft. spans, the largest at mile 12 with a bridge of 15 x 50 ft spans. The whole line was subject to heavy flooding and a large flood occurred June 1908 when the North River rose 30 feet. At this stage there were 15 stations on the section of line already opened to traffic, their average distance apart being 3.9 miles. There were no signals in use and permission to proceed was given by the stationmasters who also gave the driver a tablet as well as telephoning ahead to the next station. All main line points were manned by pointsmen. At Wong Sha the company owned 500 feet of wharfage on the north side of the Canton river, allowing ships of light draft to go alongside for direct loading. Passenger fares from Wong Sha to the Kou Wong Shek, the then end of the opened section, were 85 cents 3rd. Class, $1.55 2nd. Class and $2.55 1st. Class (single fares). Passengers going further up river from Kou Wong Shek could take stern-wheel steamers that met the first train fron Wong Sha. The steamers go as far as Ying Tak at mile 85 on the river. Shiukwan which is at mile 140 (and where the main line would touch its most important town) couldbe reached by occasional steamers but more often than not only by flat bottomed native boats because of low water. Stations on the line were constructed of red brick and also provided quarters for the stationmasters, telegraph operators and pointsmen. Platform walls were 14 inches above rail level. The rails were 85 lb per yard (from Hanyang Iron & Steel Works) and the sleepers Australian Jarra. There were then 25 locomotives, all American with most from ALCO. Type 'E' , 2-6-0 was the heaviest at 106 English tons with tender. Driving wheels were 56 inches. The leading and tender wheels were 33 inches.Cylindesr were 19 " with 26 " stroke. There is also a list of rolling stock dimensions and numbers. all of which had centr buffers and automatic couplers. The article next proceeds to describe the next portion of line then under construction which had reached mile 66 although this was as yet unbalasted. At this end a tunnel of 270 ft was under construction, the first on the line. At mile 83 the company faced even larger problems because three villages had combined to obstruct the building of the line. Matters were at a deadlock and violence

could not be ruled out. A bridge at mile 85 was to be of 13 spans of 60ft. Beyond this to mile 106 there were little engineer difficulties and earthworks were proceeding although finding good and experienced contractors for bridge works was always a problem within South China. At mile 140 the East fork of the North River would have to be crossed. a distance of 800 feet. Four spans of 200 ft were being considered. For construction purposes the line had been divided into 10 mile sections, each with a Resident (foreign) Engineer. These engineers were assisted by Chinese engineering assistants who although inexperienced were keen to learn and would eventually replace the foreigners. The engineers were provided with a guard of 12 to 20 "soldiers" under a captain to guard against trouble from villagers. More often than not these soldiers were actually villagers themselves but they generally remained loyal to the engineer since failure to protect him could result in their own execution. The article continues with a description of the staff quarters and living conditions of the staff. The Line's Chief Chinese Engineer was Kwong King Yang, a man of "high professional attainment". One map, one page of construction drawings (bridges) and 7 small photographs. One of these, a train at Wongsha and the others location views.

Hukuang Imperial Government Railways The entire English text of an agreement signed by the Minister of Posts & Communications, Sheng Hsuan Huai (盛宣懷) and five international banks and finance syndicates for railway construction and /or complettion of a number major trunk lines in the "Hukuang" (湖廣 Huguang) area south of the Yangtze. (My note: This agreement helped to trigger the provincial rebellions against nationalization of the railways by investors , anti-foreign agitators and others who had a grudge against the Qing government, leading to its overthrow.).

January 1912

Several pages of railway equipment and lines advertisements:

Henschel & Sohn of Cassell, Germany whose China agent was Carlowitz 7 Co. in Shanghai, including 1 photo of 0-6-0 tender lcomotive for the Kiangsu Rly,

North British Locomotive Company whose sole agent for China was Jardine, Matheson & Co. including 1 photo of 2-6-0 tender locomtive for the Southern Section of the Tientsin-Pukow line. (Repeat see identical June 1910 advert)

Henschel & Sohn a similar advert to the first (above) but text in Chinese, American Car & Foundry Company, a Chinese text advert for passenger rolling stock, 3 small pictures of one car exterior and two interior views, Baldwin Locomotive Works, a Chinese text advert for Baldwin locomotives with 2 pictures, one a 2-6-2 side-tank engine for the Hunan (section of) Yueh Han Rly and the other a 2-6-2 side-tank for the PMBL rly., American Locomotive Company (ALCO), A Chinese text advert for locomotives, including 2 pictures, one a 4-4-0 tender locomotive No 401 for the South Manchuria Railway and the second a 2-6-2 tank for the Yueh Han Rly.,

H Diederichsen & Co., a Chinese text advert for Hannomag railway locomotives supplied by this agent,

The Railway Signal Co. Ltd., a Chinese text advert for signal equipment,

Avonside Engine Co. of Bristol England, a Chinese text advert for locomotives, 1 poor picture of unidentified 2-6-0, The Lima Locomotive & Machine Co., China agent Shewan-Tomes & Co advert for Lima locomotives, 3 small pictures, one a Shay geared locomotive built for the Imperial Peking - Kalgan Railway.,

Imperial Railways of North China, a one page advert for the through service from Peking to Mukden with connections to other lines with 3 small pictures

of a train at Tientsin, Peking station and a 1st Class sleeping birth, Traffic Manager was J.E. Foley.
Imperial Chinese Railways - Kirin - Changchun Line, An advert announcing opening of the first section of the line between Changchun and Coran, including timetable for one up and down train a day w.e.f. 1st Jan 1911, 2 small pictures of views at Changchun and Kirin,
Imperial Chinese Railways - Canton-Kowloon Railway an advert for this line with a timetable showing trains between Canton (Tai Sha Tou) and Shek Lung .
Imperial Chinese Railways The Cheng - Tai Railway & the Peking - Kalgan Line, an advert for the Shansi Line from Chengtingfu to Taiyuanfu and for the Peking to Kalgan line through the Nankow Pass to where the Great Wall and Ming Tombs could be seen, Taotai Jeme Tien-Yu, Director-General, Hannoversche Maschinenbau A. G. of Hannover Germany advert for locomotives, includes 1 picture of 4-6-0 tender loco (without tender) built for the Tientsin-Pukow Railway (Northern Section), China agent H. Diederichen & Co.

February 1912
Missing - (believed not published due to the revolution) . The editions during the previous few months had also been getting progressively thinner suggesting publication difficulties.

March 1912
There was very little current news in a very thinned down magazine. Many of the pages seemed to be padding with technical information about American export machinery.
The Mines of the Orient This long article contained a short mention of the Swatpow-Chaochowfu Railway reporting its progress and passenger and freight figures.
Two photographs of trains and Canton station on the Canton-Kowloon Railway. The top photo on page 313 is incorrectly captioned as a train on the British Section. The locomotive is a Manning-Wardale tank locomotive and freight cars "CKR" indicating this was on the Chinese Section of this line.
Chinese Railway Extension A report that the Chinese and Japanese governments had agree to build a new connecting line between the PMR and SMR stations at Mukden.
Railway Ferry Boat for the Sunning Railway A report that a train ferry had been purchased to cross the river at Niu Wan.
Formosian Railways A report that night services had commenced.
Mr. E. S Lindsay The death of the former Chief Engineer of the Kowloon - Canton Railway (British Section) was reported.
The Kiangsi Rrailway Loan The company was reportedly negotiating for a further loan.
South Manchuria Railway Dividends The profits were down due to bubonic plague.

April - May 1912
Missing - (probably not published due to the revolution)

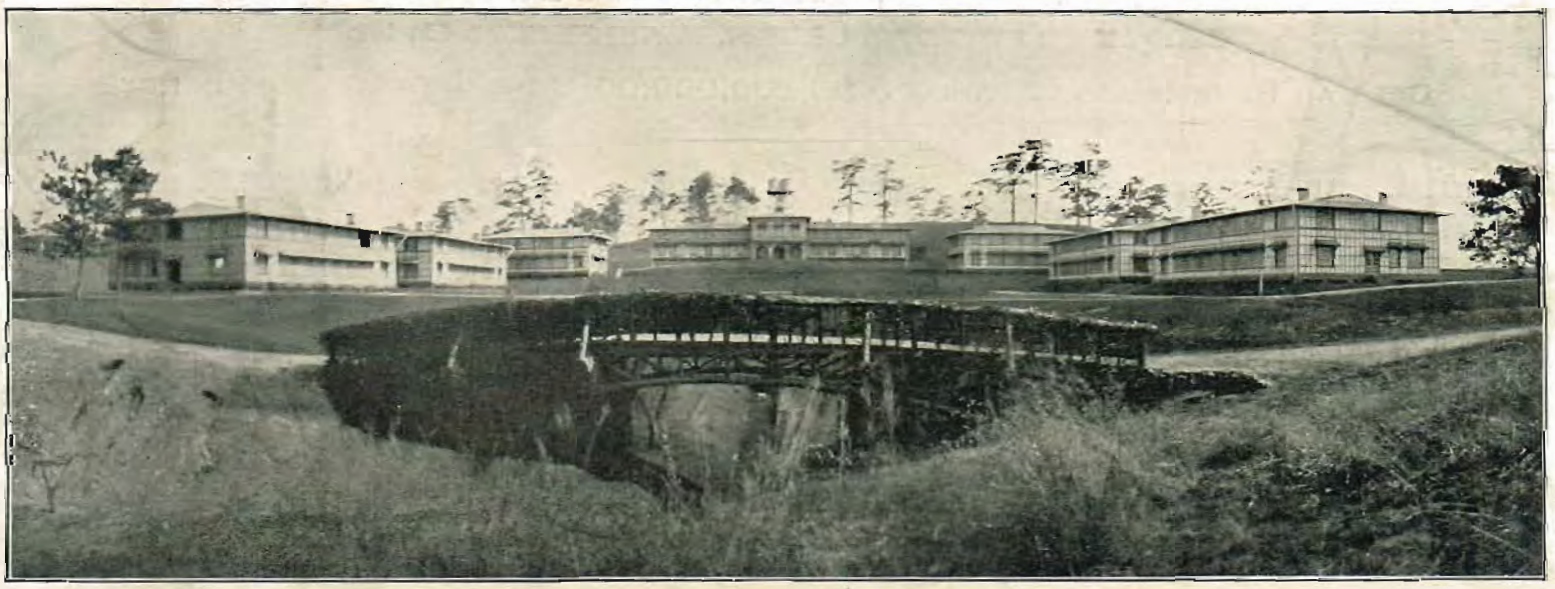
THE FAR EASTERN REVIEW

VOL. VIII.—No. 1. MANILA AND SHANGHAI, JUNE, 1911. 25 cents, U. S. Cy.

THE IMPERIAL JAPANESE GOVERNMENT RAILWAYS

BAGUIO, THE SIMLA OF THE PHILIPPINE ISLANDS

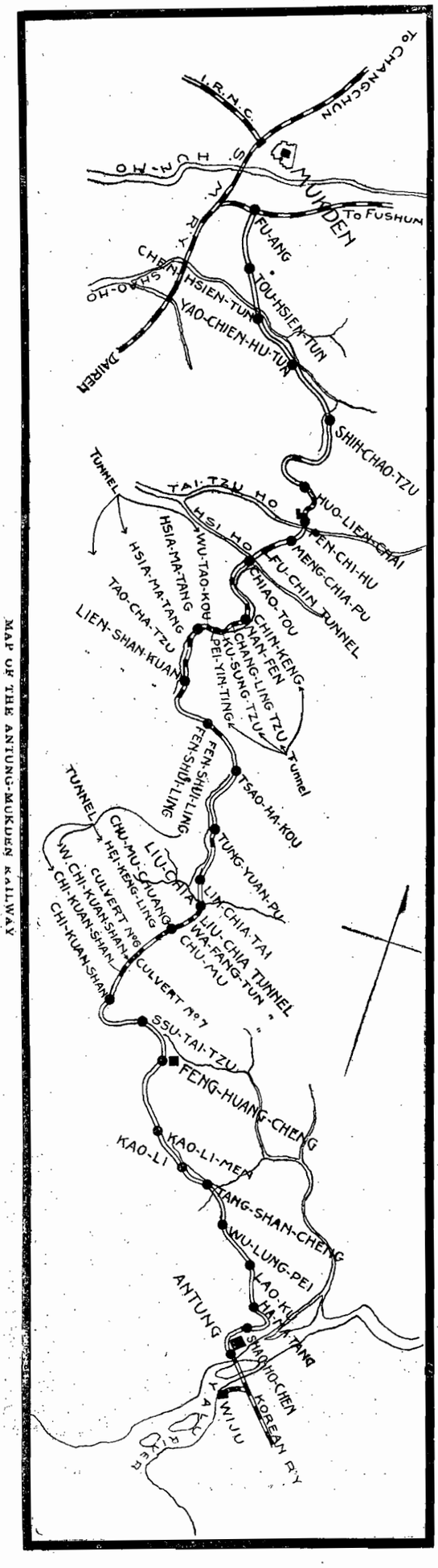
THE PHILIPPINE ALPS—VIEW OF THE ZIGZAG ON THE BENGUET ROAD.



GOVERNMENT CENTER AT BAGUIO.

ENGINEERING
COMMERCE & FINANCE

THE ANTUNG-MUKDEN RAILWAY



MAP OF THE ANTUNG-MUKDEN RAILWAY

The railway line between Antung and Mukden, made necessary by the operations of the war between Japan and Russia, stands as a monument to Japanese engineering skill and enterprise, and typifies Japanese advance in Manchuria. This little narrow gauge road conceived during the stress of a great national conflict as imperative for the successful forward movement of the Japanese army into Manchuria, for some time simply served the needs of the army, but exigencies of politics and trade have transformed it into the most important thread in the web of Japan's strategic lines, and a necessary link in the development of transasiatic travel.

Shortly following the occupation of Antung by the Japanese forces in May, 1906, owing to the almost impassable character of the mountain roads in this region and the necessity of facilitating a more rapid movement of supplies, the construction of a light railway was begun by their engineer corps and its extension continued with the advance of the army as far as Shichiaotzu, a point about 30 miles to the southeast of Mukden. The country to the north and west of Shichiaotzu, drained by the Taitzu River, a tributary of the Hun Ho, being quite level and ordinary methods of transportation comparatively easy, this point was then made the terminus of the railway until August of 1908 when the Okuragumi, a large Japanese concern, received from the military authorities a contract to extend it to Mukden.

The gauge was 2 feet 6 inches. The rails as well as the rolling stock, including locomotives and trucks, were supplied by the Baldwin Locomotive Works. The system possessed altogether 150 locomotives, 100 of these being of 16 and the remainder of 11 tons. The freight cars were all open and similar to those used for hauling sand in America. The entire carrying capacity of the railway was only some 1200 tons. Besides these open cars there were a number with tops and designed especially for passenger traffic.

The line remained under control of the military authorities until its transfer to the South Manchuria Railway Company.

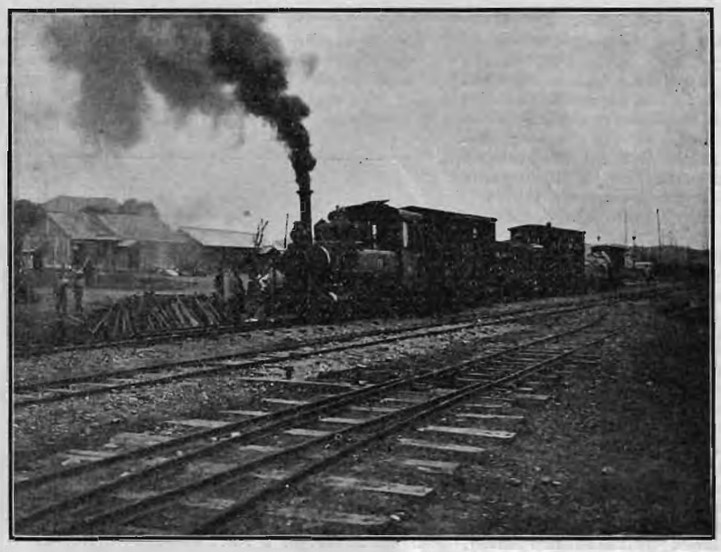
The railway was opened to general traffic, both freight and passenger, in August 1908. Two schedule-time runs are daily made from each end in addition to more or less regular ones between some of the intermediate points. The journey from Antung to Mukden requires two days. The through trains both leave in the morning, one at 6 o'clock and the other at 9, and reach Tsaohohu (Sokako) 12 hours later. Operation after dark would of course be subject to a great deal of risk, so that passengers are obliged to pass the night at this point, resuming their journey on the following morning at the same hours as before.

Designed primarily as a military supply line, it was constructed in haste to keep pace with the rapid forward movement of the army, and to avoid the construction of expensive tunnels the line was given a wide detour, with many steep gradients and short, sharp curves. The bridges were hastily constructed of wood and were unsafe for heavy loads. The small locomotive hauling three or four cars, travelled at an exceedingly low speed for fear of derailment, and travel by night was impracticable. The time consumed in covering the 188 miles between Antung and Mukden was two full days.

In other words the line was wholly unsuited for ordinary commercial purposes and after the termination of the war and the withdrawal of the Japanese troops, it had no practical value.

With an eye to the future availability of the line for similar strategic purposes and to make it efficient for the development of the territory and legitimate commercial uses, the Japanese Minister at Peking had inserted in the Supplementary Agreement to the Manchurian Convention of Peking of 1905 a clause to the effect that Japan not only had the right to maintain the line as a military railway, but the right to improve it and transform it into a commercial line. To make the line effective and useful as a connecting link in the through system the conversion of the narrow gauge to standard was the first requisite, and this in turn demanded the

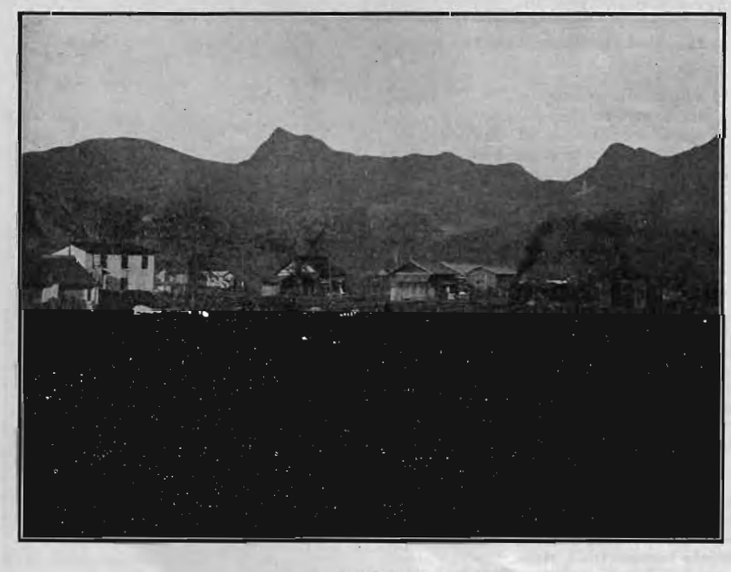
ANTUNG-MUKDEN RAILWAY: BLACK MINE PASS



ANTUNG STATION

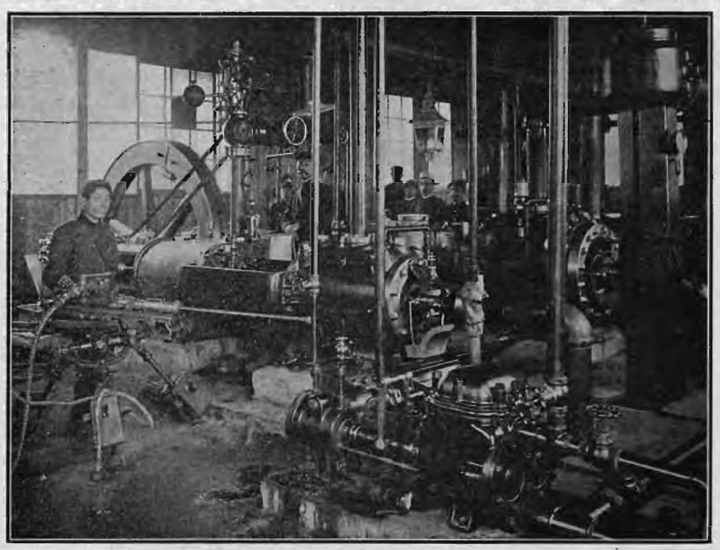
ANTUNG STATION

STATION AT CHIKUANSHAN



PENCHIHU STATION

VIEW OF TSAOHOKOU. THIS TOWN IS LOCATED MIDWAY BETWEEN MUKDEN AND ANTUNG



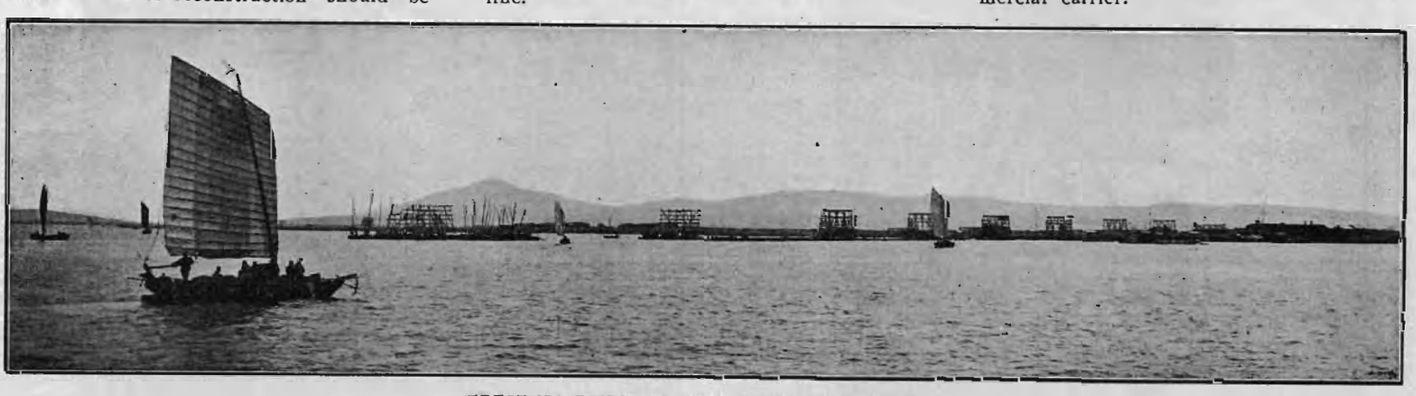
INGESOLL RAND COMPRESSOR PLANT AT FUCHINLING TUNNEL

building of new bridges, the boring of tunnels, the straightening and grading the line, and other improvements without which its value for commercial purposes would remain nil.

The Pekin Agreement of 1905 stipulated that the work of reconstruction should be commenced within a period of two years but Japan failed to avail herself of the opportunity within the time limit. The sudden activity of Russia, however, in deciding to construct the Amur Railway and double track the Trans-Siberian line together with other unmistakable signs of her determination to strengthen her position East of Baikal as the first move in regaining her lost ground, stirred the Japanese Government into a sudden realization of the danger of further delay in reconstructing the Antung-Mukden line.

By this time, however, the Chinese Government, with the hope of regaining control over the line, raised various questions which for a time threatened to bring about a disruption of friendly relations with Japan. China finally advanced the argument that the work of improvement must be confined to the existing tract and no broadening of the gauge could be permitted. She revived several other immaterial issues which if concurred in by Japan would have nullified the provisions of the Peking Agreement and made impossible the use of the line as a commercial carrier.

The Japanese Government in the face of this uncompromising attitude, after a final attempt to induce China to reconsider her position, suddenly announced that it would take independent action and proceed to the reconstruction of the line in accordance with



ERECTING PIERS FOR THE YALU RIVER BRIDGE

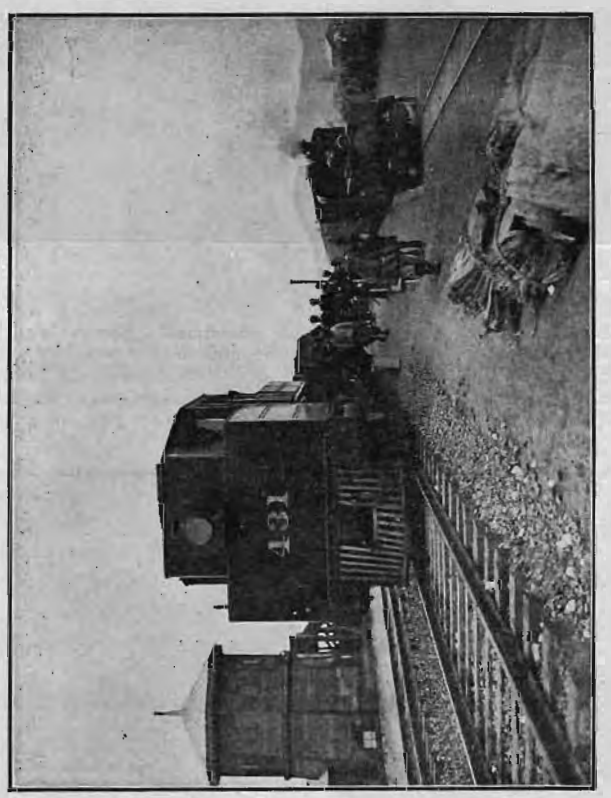
PENCHIHU TOWN AND COLLIERY

ANGLER'S POINT

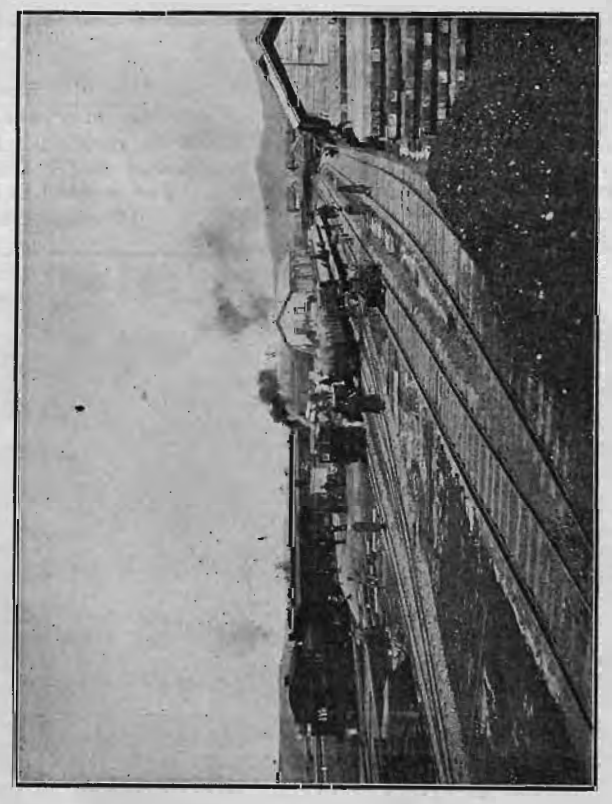
her treaty rights and in harmony with the survey already determined on by commissioners of both Governments. Thereupon the Chinese Government, realizing that further obstruction was dangerous, authorized the Manchurian Viceroy to sign the following memorandum on the 19th of August 1909.

I.—The same gauge as that of the Peking-Mukden Railway shall be adopted.

II.—Both Japan and China shall recognize and approve of the whole line as already surveyed and agreed to by the Commissioner of the two Governments. But the location of that portion of the line from Chenhsiangtun to Mukden shall remain to be decided by mutual conference between the two countries.



JUNCTION WITH THE SOUTH MANCHURIA RAILWAY



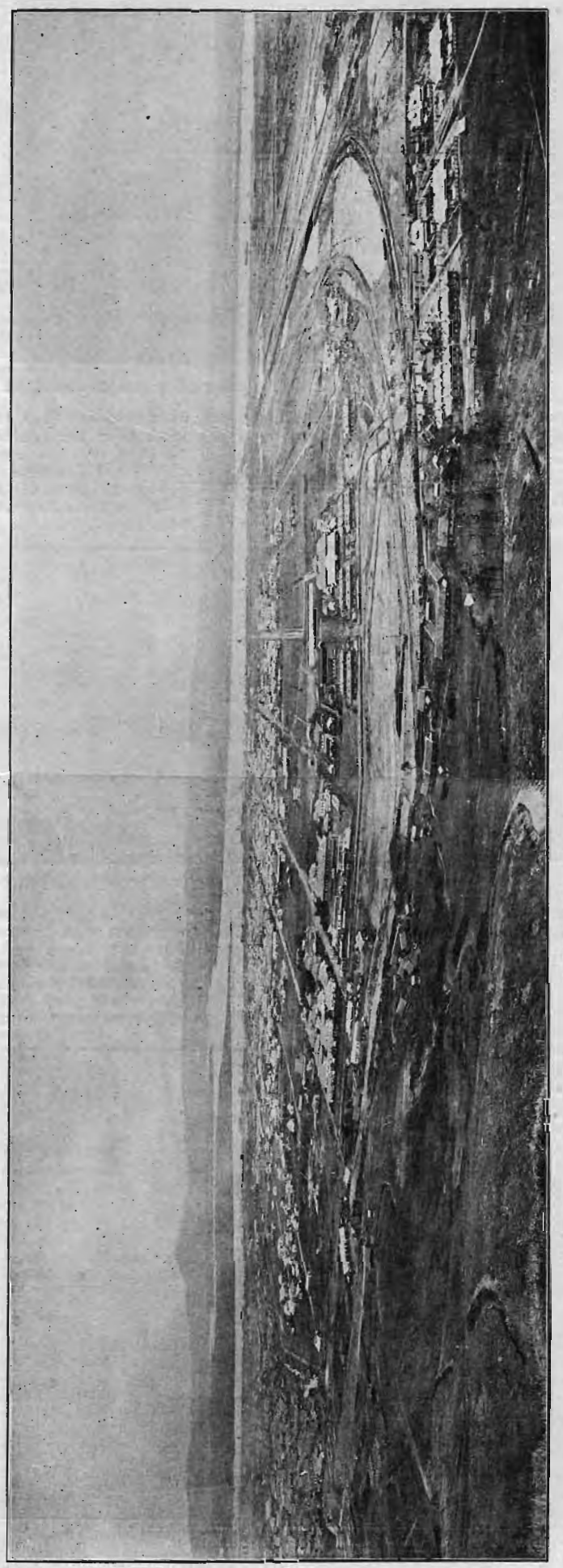
III.—On and from the date when the Memorandum is signed negotiations for the purchase of land and for adjustment of all other details be instituted.

IV.—From the day following the signing of the Memorandum, that is, from the day after the negotiations above mentioned, the instituted work of reconstruction shall be accelerated.

V.—China shall instruct local officials along the line to give every facility regarding execution of the works.

Under the new Agreement work on the line was initiated shortly afterwards and has been pushed ahead in a manner highly credit-

(Continued to page 20.)



VIEW OF ANTUNG, SHOWING THE JAPANESE CONCESSION AND YALU RIVER IN DISTANCE

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.
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THE HU-KUANG LOAN

When the principle of the "Open Door" in the matter of purchase of foreign railway materials, was first advocated by the FAR EASTERN REVIEW, in connection with foreign loan agreements it was not very warmly received in certain interested quarters, but the spirit of fair play involved, gradually appealed to the different groups interested in China's railway finance until it was finally accepted as the only reasonable adjustment of the usual conflict of the different foreign interests when any one nationality attempted to conclude a loan on the old basis. With the conclusion of the Hu-Kuang Loan, May 20, the principle was fully recognized by the four powers interested, viz, Britain, Germany, France, and America, which practically assures its incorporation in all future agreements.

This special clause in the Hu-Kuang Loan Agreement provides that the British and China Corporation and the Deutsche-Asiatische Bank will receive a commission of 5% for all foreign materials purchased only; that Chinese materials shall be utilized whenever available and specifically provides that the rails shall be purchased from the Hangyang Iron Works; that foreign materials necessary be purchased in the open market and under equal conditions as to quality and price, preference will be given to the manufactures of Britain; Germany, France and America; that if Chinese goods are offered in competition to the manufactures of the four nations named, all conditions being equal, Chinese material is to be given the preference.

In concluding a comprehensive review of the terms of the Hu-kuang Loan, the *Peking Daily News* directs atteution to the improvement therein with respect to purchase of material as compared with former agreements and says:

"Though the agreement still bears features of the ordinary previous loans in the matters of the control of finance, the appointment of foreign engineers and the purchase of foreign materials, yet thanks to the editor of the FAR EASTERN REVIEW who first advocated the principle of equal opportunity to the goods of all nations to supply the wants of Chinese Railways there is to be found in the present agreement a decided improvement upon the old ones, the provision for giving railway materials of the world an equal opportunity to compete in the Chinese market".

The loan is for £6,000,000 drawing interest at 5% for a maximum term of 40 years but redeemable after ten years at a premium of two aud one-half per cent and after seventeen years at par. If additional funds are required the agreement provides for an additional loan of £4,000,000 on the same terms.

China is to receive 95 per cent of the face value of the bonds and the amount deposited in the banks, other than in China, is to earn interest at the rate of 3% per annum the rate on deposits in banks in China to be later decided.

The proceeds are to be utilized in redeeming the American-China Development bonds outstanding to the face value of £500,000 at 2½% premium; to complete the Hupeh-Hunan section of the Canton-Hankow Railway, 600 miles, and the construction of the Hankow-Szechuan Railway, 700 miles, a total of approximately 1300 miles of line. The loan is secured by liens upon Hupeh likin and salt taxes and Hunan imported rice tax, general likin and salt taxes.

Provision is made for a British engineer-in-chief on the Canton-Hankow, a German on the section of the Hankow-Szechuan line to Tchang and an American on the Tchang-Kweichou section.

The agreement also provides for auditors to supervise the expenditures. The director general will be Chinese and the appointments of foreign engineers-in-chief will be made by the Chinese Government subject to the approval of the representatives of the financial interests.

The last word on this loan is the news from London that the issue was oversubscribed at a 101⅛ which indicates the favorable attitude of foreign investors to Chinese loans even involving the most liberal terms yet arranged.

THE NATIONALIZATION OF CHINESE RAILWAYS

It would seem that with the organization of the council cabinet, China had inaugurated an active federal policy designed to strengthen the central government and bring order out of chaos. The most important edict issued in many years provides for the nationalization of the trunk lines of the Chinese empire and including them in one comprehensive system.

As the decree states, to control the defence effectively, the only means is the speedy construction of the railways. "After careful and repeated deliberations, the nation must possess a complete system of trunk lines to and from the four quarters of her territory in order to administer the government by a grasp on the central pivot." The decree proceeds to review the history of Chinese railways pointing out the unsatisfactory results obtained especially in Kuangtung, Hunan, Hupeh, and Szechuen where the decree declares: "the offices have been open for a number of years, only wasting money by inactivity. Thus in exhausting the fat of millions of our people, we find only waste and extravagance in some cases, and misappropriation and pocketing in others, so that it is feared the longer that time passes, the heavier will be the burden of the people, high and low will suffer from its effects, the consequences of which are beyond our present imagination. Therefore, we desire to proclaim explicitly to the world that all the trunk railways shall be State owned, this shall be the fixed policy. Whatever trunk railways in the provinces which were under private management by companies established before the third year of Hsuan Tung, have been delayed in construction long enough, they shall immediately be taken over by the Government as State owned, and their building work shall be pushed on with energy. With the exception of the branch railways which shall be continually allowed to be undertaken by the people according to their ability, all cases of trunk railways formerly granted shall be cancelled. With regard to the details in the manner of taking them over, let the Ministers of Finance and of Posts and Communications gravely obey this Decree, and devote their whole attention to devising the fulfilment of it. They shall then, as soon as possible, request our order before execution. The Ministers in control shall not feel hesitation or fear, in preventing matters going from bad to worse. If there be anyone, who intentionally disturbs the railway policy regardless of the public welfare, creates doubts and incites resistance, he shall be summarily dealt with in accordance with the penalty for disobedience to law. Let this be promulgated and made known to all."

Tuan Fang was appointed director general of the Canton-Hankow and Szechuan-Hankow trunk lines in connection with the carrying out of the nationalization decree and all the officials of the provinces and of the railways were instructed to facilitate the transfer. To offset any local manipulation of local shares an Imperial order was issued prohibiting the sale of railway shares in these three provinces and the Viceroys and Governors where directed to assume responsibility for the maintenance of order and the protection of officials engaged in the nationalizing of these lines and the carrying out of the construction program. As was expected there has been the usual opposition in these three provinces, but realization of the firm purpose of the government to carry out its railway policy is having very desirable effect.

It is understood that provision will be made whereby the provincial companies may undertake the construction of branch lines and if sincere they will find plenty of opportunity to expend their energy with good results. This proposal seems to appeal to some of the leaders previously opposed to any inter-

ference and it is to be hoped that by the time the trunk lines are completed, the mileage in branch lines constructed in this manner will be considerable.

PHILIPPINE GOVERNMENT'S FRIENDLY ATTITUDE TOWARDS CAPITAL

In our issue of February, 1911, certain references were made in an article appearing under the caption "American Capital in the Philippines" that might be construed as an unjust charge that the Philippine Government was discouraging outside capital. Nothing could be more untrue and misleading as all who have made investments in the islands or who have even expressed interest, can testify. Indeed, the most desirable feature of the policy of the Government is the continued encouragement of outside capital in the development of insular enterprises. Every means is exhausted in making investment as attractive as possible. It might also be said that the success realized in interesting capital in insular ventures is due almost entirely to the active policy and initiative of the Philippine Government.

We regret that such a misconception of the real attitude of the Government should have evolved from the article referred to, for the reason that it is not in accord with the facts, nor has any such conclusion our editorial endorsement.

The attitude of capital towards Philippine investments is slowly changing for the better as more general, reliable information respecting the favorable natural conditions and opportunities for legitimate enterprise in the development of uncovered wealth and latent industries are realized. When it is remembered that with the conclusion of the Treaty of Paris the American government undertook to administer the islands as a trust of an entirely new and altruistic character, with the disadvantages of inexperience in this line of governmental endeavor, with every industry almost at a standstill, the unsanitary conditions inviting the ravages of epidemics, and the unsettled political conditions retarding the confidential relations between the American government and the Filipinos, there now prevails a measure of participation in prosperity by all the people of the islands that is astounding. Today, no section of the Orient offers a more desirable field for the exercise of constructive ability of a high order in every department of industry than the Philippines and it is gratifying to learn that this is being realized in the centers of wealth and industrial activity throughout the United States.

American capital is always wary about invading unknown fields until convinced that enterprise affords substantial returns; that it will be accorded protection; that the labor supply is adequate and of a reliable character. It has taken many years for the Philippines to convince the outside world that all these requirements are fully met by insular conditions, and the most convincing proofs are those afforded by the experience of every American enterprise in the archipelago that has been directed by men who have adapted themselves to local conditions and who se relations with the native population have inspired confidence and respect in their integrity.

It is but natural that the casual, unthinking, western transient in the Orient is inclined to belittle the Malay laborer. He is usually compared unfavorably with the Chinese, and to substantiate it they point to the wonderful accomplishment resulting from the importation of Chinese labor, say for instance into the Federated Malay States. Indeed recently the FAR EASTERN REVIEW careful as it is of its editorial position, as a result of the presentation of a preponderance of apparently irrefutable evidence, took occasion to give expression to sentiments denouncing the Malay as a laborer to which such strong, and since proven well founded, objection was taken by Philippine labor authorities that we decided to make a more thorough investigation. We are now glad to revise our judgmeut of the Malay laborer and to take pleasure in doing justice to an element of the Philippine population that has suffered for centuries through no fault of its own, but with a remarkable appreciation of more liberal conditions of employment in the form of increased meaus of securing the comforts of life, better treatment, and a larger measure of personal independence, the Philippine laborer has more than demonstrated his capacity as a producer under proper encouragement and supervision.

This was not true of him in 1898. It may not be true of him even to this day in Malaysia. He secured little of the fruits of his efforts. He was the real "man with the hoe". It was to the interest of his masters to keep him alive, and in the centuries of peonage he was naturally reduced to that condition where there was no incentive to increased effort. He worked simply to secure the simple necessities of life and nature in its liberality relieved him of a large measure of dependence on his inconsiderate masters for his wants had been reduced to the simplest form.

But the Philippine Government did not accept the theory that the "Malay Won't Work", as did the foreigner in Malaysia. It proceeded along different lines. It investigated the conditions under which the Malay laborer lived; discouraged peonage and in every department of governmental activity gave him a fair wage, kind treatment and encouragement. At first this liberal policy was looked upon with suspicion. It was unheard of among the laborers that they should receive money direct from their employer and such a substantial sum that they would have something left over for comforts after supplying their simple wants. Then there was the opposition of the old masters to whom the ignorant mind, trained by centuries of submission, turned naturally for counsel. The motive of the masters 'attitude is obvious. Instead of remaining a serf whose labor cost little or nothing there was danger of the laborer becomiug a real live entity that would have to be accounted for in calculating profits. This governmental interference was to the jefes an unheard of outrage. All over the islands the howl went up. But the administration never faltered. It continued to pay reasonable wages in its different departments of activity and as the years passed, an adjustment of private enterprises followed. The old masters discovered that the well paid laborer was a better investment than the half starved peon. The laborer slowly realized that increased effort brought larger returns in the comforts of life, the average production increased, industries received an impetus and communities gradually took on a general appearance of prosperity.

It is very true that for several years, the sudden change had the effect of making the old peon unreliable. He had so much wealth after a few pay days and such simple wants, that he did not have to work all the time any more. But this did not last. He soon realized that the extra wage placed comforts within the reach of himself and his family. When he reached this point, the Malay laborer of the Philippines became ambitious. He made his aim in life to push his name along towards the top of the payroll. Today, the Filipino laborer is doing his share. He is reliable. Once adapted to his surroundings, familiar with his work and accorded the consideration due the producer he is now recognized as equal to, if not more desirable, than outside labor.

This is certified to by the Philippine Railway Company, the Manila Electric Railway Co, the Atlantic Gulf and Pacific Company, the Batan Coal Mines, the Director of the Bureau of Public Works, the Insular Lumber Company, The Cadwalladers-Gibson Lumber Co, Derham Bros, and many more of the leading successful private. undertakings in the islands.

When we said in our February issue that "the British and Dutch forgot a century ago—that the Malay won't work" we were reflecting thegeneral attitude towards him in Netherlands India and Malaysia, but we are now convinced that we were wide of the mark when we applied this reference to labor conditions in the Philippines. The Dutch and the British might also have occasion to revise their opinions of the Malay laborer were they to give him the same chance to make good in Malaysia as he has been given in the Philippines. Had Americans generally accepted him at his face value as they found him, as unfortunately some of them did, and had left him a starving peon without the strength or inclination to develop his producing powers we might today be justified in agreeing with our Dutch and British friends. But, very fortunately, we have taken the opposite course with most encouraging and remarkable results.

This was no easy task for the Administration nor the private interests. In the first few years of occupation under unsettled conditions, with the peonage system widespread and effective in its control of labor, the inexperienced westerner, anxious to hurry the east, ignorant of the system that controlled labor, and impatient of results, loudly denounced the Philippine laborer and clamored for Chinese. This conception of the laborer was naturally spread broadcast and was accepted without investigation. It was supported by the sentiment prevailing in Malaysia. Unfortunately slander spreads more rapidly than its retraction and notwithstanding the fact that these same westerners, after the exercise of patient investigation, followed by an adjustment of methods to undermine the peonage system, had been forced to revised their judgment to an appreciation of the labor under changed conditions, rarely took the pains to give expression to their changed attitude. This has not only proven unjust to Philippine labor but has misled investors on this important requirement.

We are unconvinced that Filipino labor has yet reached its highest capacity for production, but we have the unequivocal convincing testimony of the heads of the large firms referred to above, that the Filipino laborer has proven in every case equal to, and in many cases is preferred to the Chinese laborer.

The administration, notwithstanding any doubts to the contrary, has been most consistent in living up to the policy originally outlined. Its purpose is to develop the islands along lines designed to give all the inhabitants participation in benefits resulting. Even those who accepted wholly the precedents in colonial exploitation having little regard for the welfare of the native inhabitants, have revised their judgment in recent years as they recognize the increasing purchasing power of the Filipinos under the administration" beneficent policy. More adequate return fos labor with increased production and export, makes for prosperity. Trade reports for the last few years show increasing purchases abroad and the internal revenue report shows annually increasing internal trade. All this bespeaks a healthy prosperity not confined to any class and justifies the course pursued by the American government.

Such conditions are an invitation to capital not duplicated in countries where the greater purpose of government is sacrificed in the interest of the few. With a population industrious, prosperous, and contented, a climate most desirable, sanitary conditions unexcelled, and with unlimited tropical wealth, no section of the world offers greater returns for capital invested in industrial enterprises wisely directed.

THE GOOD NAME OF THE MANILA CIGAR

In a recent issue of the FAR EASTERN REVIEW attention was directed to a proposed publicity campaign on the part of the Manila Tobacco Association to overcome the malicious propoganda carried on by enemies in the United States against the good name of the Philippine cigar and that has resulted in a serious falling off in export for the eleven months ended May 31, 1911 compared with the corresponding period of 1910. For eleven months ended May 1910 there were 82,000,000 cigars exported while during the corresponding period 1911 the total export was only 24,000,000. This seems sufficient reason for united and prompt action.

That the press of the United States is friendly to Manila cigar interests has been demostrated by hundreds of favorable comments by our exchanges on this article and should hearten our local manufacturers.

up to the 31st May, 1909, were of the following amounts:—for the Keifu (Seoul-Fusan) Railway, Yen 20,123,800 (£2,061,231); for the Hokkaido Tanko (Colliery) Railway, Yen 30,997,100 (£3,174,957); for Kobu Railway, Yen 14,599,550 (£1,495,396); for the Japan Railway, Yen 142,523,600 (£14,598,341); for the Ganyetsu Railway, yen 2,422,000 (£248,079); for the Nishinari Railway, yen 1,846,900 (£189,173); for the Sanyo Railway, yen 76,639,200 (£7,849,964); for the Hankaku Railway, yen 273,650 (£28,029); for the Sobu Railway, yen 150,000 (£15,364); for the Nanao Railway, yen 100,000 (£10,243); and for the Tokushima Railway, yen 100,000 (£10,243); total, yen 289,775,800 (£29,681,020).

While the Government had the option of completing the purchase of the lines within the period of ten yeas by paying the companies the 5% interest on the purchase price in lieu of their customary dividends, it was found more economical to float the entire issue at once, and the remaining balance of yen 186,543,000 was paid by the end of July 1909 in the following proportions. For the Hokkaido Railway, yen 6,131,500 (£628,034); for the Kyushu Railway, yen 118,508,150 (£12,138,497); for the Hokuyetsu Railway, yen 3,721,800 (£381,215); for the Kyoto Railway, yen 3,296,400 (£337,641); for the Boso Railway, yen 960,400 (£98,371); for the Kwansai Railway, yen 30,437,550 (£3,117,643); for the Sangu Railway, yen 5,728,950 (£586,802); for the Hankaku Railway, yen 4,010,700 (£410,806); for the Sobu Railway, yen 12,256,050 (£1,255,357); for the Nanao Railway, yen 894,300 (£91,601); and for the Tokushima Railway, yen 597,200 (£61,170).

The total mileage of the private lines on the day of purchase was 2,823 miles, and the total amount of loan bonds delivered to the companies as purchase price was Y 476,318,000 (£48,788,159) at an average of Y 168,000 ($84,000) per mile. It was feared that the issue of such an enormous amount of bonds in one year would naturally lower their market value but, owing to the solid financial condition of the railways, a steady rise in value has been witnessed instead.

The purchase bonds were taken up as a domestic loan, and bear five per cent interest. The principal of the loan remains unpaid for the period of five years from the time of issue (1913) and is to be fully redeemed within fifty years (1963) from the profits of the railways. Provision has been made for the retirement of these 5% bonds and their substitution by four per cent bonds, to enable the Railway department to effect a saving so as to pay the interest on additional loans for future improvements and extensions.

Before the nationalization scheme was effected, funds for the Government railways were appropriated from the general account of the Treasury, but with the absorption of the 17 private lines and the creation of the large bonded indebtedness, a special law was enacted in 1909 placing the finance of the State Railways entirely independent of the General Budget and accounts.

Under this law the Imperial Railway capital and funds for materials and all moneys to be hereafter invested are made the capital of the railways and a special account established by applying the annual revenue therefrom to the annual expenditure. The expenditures required for the construction and improvement of railways are defrayed out of the railway profit; and in case of a deficit in the railway profit, the Govern-

BRIDGE NO 5 UNDER CONSTRUCTION OVER HSIHO—(FEB. 1911.)

THE ANTUNG—MUKDEN RAILWAY

(Continued from Page 16.)

(1) Land—Right of way, 6,210,000 "tsubo".

(2) Total volume of Earthwork involved, 1,384,000 cubic tsubo. The portion already completed, 990,000 cubic tsubo.

(3) Bridges—Total number, 218; aggregate length, 21,180 ft.; the longest bridge is the one across the Taitzu with a length of, 1,900 ft,

(4) Culverts—Total number, 213; length of open culverts, 1,510 ft; length of arch culverts, 2,098 ft.

(5) Temporary wooden bridges (between Antung and Chikuanshan)—Total number, 67; aggregate length, 4,210 ft.

Note: (1) A "tsubo" is equal to 36 qs. ft. (2) A cubic "tsubo" is equal to 216 cub ft.

(6) Tunnels—Total number, 25; aggregate length, 26,540 ft. The four main tunnels are:—

	Length	Heading completed
Fuchinling	4,884 ft.	3,800 ft.
Chikuanshan	3,284 "	2,770 "
Fenshuiling	1,914 "	Complete
Heikengling	1,505 "	Complete

Heading has been drilled in the case of the other 21 tunnels.

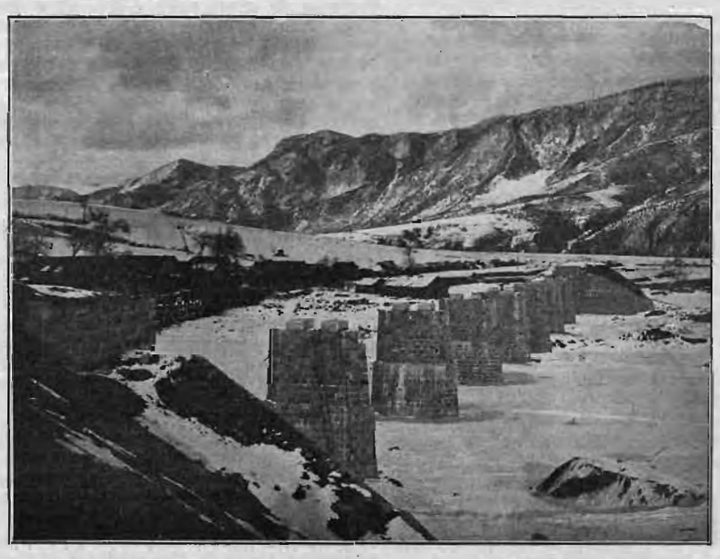
(7) Railway line—Length of main line, 170 miles (including 8 mile section between Fuan and Mukden); length of sidings, 35.5 miles Total track length, 205.5 miles; the 38 mile section from Fuan to Penchihu and the 53 mile section from Antung to Chikuanshan was opened to standard guage traffic, the former on January 15 this year and the latter on November 3 last year.

(8) Stations—The number of stations, 25.

(9) Coolies and labourers—The working force now employed comprises 600 Japanese, 3,200 Chinese and about 200 Koreans. In summer time, last year, the total number of coolies employed exceeded 20,000. The ordinary coolies wage ranges from 45 sen silver to 50 sen silver per day.

(10) Supervision of Work.—The line is divided into four divisions which are subdivided into 19 sections. The division superintendent's quarters are located at Penchihu, Chiaotao, Chikuanshan and Shahochen (Autung) The personnel of the superintendents' quarters comprises 4 superintendents, 9 clerks, 37 foremen.

(11) Geological Formation—From the Yalu River proceeding up north west to Chikuanshan the geological formation consists of granite on the right side of the Railway Line, and of gneiss on the left; about Chikuanshan it changes to stratified rock of cambria as far west as Penshihu where a carboniferous layer is found surrounded by old vision limestone. From Penshihu, going to westward the strata changes to cambria again, the alluvia extending to Mukden, the terminus of this line.



PIERS FOR BRIDGE NO. 8.—OVER THE HSIHO (FEB. 1911.)

FAR EASTERN RAILWAY NEWS

THE HU-KUANG RAILWAY LOAN AGREEMENT.—A dispatch from Peking under date of May 21 announced the conclusion of the loan of £6,000,000 bearing interest at 5% equally divided among the four powers interested. The proceeds are to be utilized for the completion of the Canton-Hankow and the Hankow-Szechuen trunk lines. According to latest advices the lines to be constructed covered by the loan aggregate about 1300 miles of which 600 approximately represents the balance of the Canton-Hankow trunk. From Hankow to Ichang 400 miles, and from Ichang to Kweichow (Szechuen) 300 miles, comprise two sections of the Szechuen line. A British engineer will be in charge of the Canton-Hankow section; a German on the Hankow-Ichang section and an American on the Ichang-Kweichow. The construction involved is expected started within six months and all the lines with the exception of the Ichang-Kweichow are to be completed within three years. The loan runs for forty years and is secured by the revenues of the different provinces through which the lines pass. The agreement also provides for an additional £.4,000,000 loan if required.

NEW RAILWAY DEPOT AT NEW WIJU.—It is proposed to build a new station at this point to cost 250,000 Yen.

JAPAN PARTICIPATES IN CONTINENTAL RAILWAY UNION—At the recent convention at Brussells the Japanese delegates secured the privelege of participation and a union ticket service will be available from September when tickets will be issued at Shimbashi, Hiranuma, Kyoto, Osaka, Kobe, Nagasaki, Shimonoseki and Moji stations to all parts of Europe.

ROLLING STOCK FOR THE KIRIN—CHANGCHUN RAILWAY.—The *Peking News* announces that the Tongshan Railway Shops are constructing the following for this line: six 17 by 23 cylinder Mogul engines; six tenders; two shunting engines; one private car; four composite cars; six brake vans; six 30 ton covered goods vans; twenty 30-ton low side cars; twenty 30-ton high side cars. Also a number of various goods cars are under construction. The following have already been delivered:—One shunting engine; twenty 30-ton low side cars; one tender; six brake vans. The same paper also contains this telegram from Mukden, dated May 24:—One locomotive, one tender, ten 30-ton cars and brake vans have gone forward from here by the South Manchuria Railway to Changchun. The entire stock went away without a hitch.

SOUTH MANCHURIA RAILWAY INSURANCE.—Ten leading fire insurance companies have agreed to cover freight risks in the warehouses of the company at Yinkow, Mukden, Tiehling, Kaiyuan and Szupingchieh at an ordinary rate of one per cent to a maximum value of 8,000,000 yen and to the value of 5,890,000 yen covering goods on Dairen wharves.

KOREAN RAILWAYS.—It is expected that the line connecting Taichon and Kuasan, Korea, will be open for general traffic by April next year.

EUROPEAN CONNECTIONS WITH PEKING.—A proposed scheme is reported underway to construct a direct line of railway connecting Paris with Peking so that St. Petersburg would be but 7½ days journey from the Chinese capital, Berlin 9 days, and Paris, 9½ days. No definite information about this proposed project is at present available.

THE KOWLOON-CANTON RAILWAY.—The total receipts of the British section for April amounted to $12,162.50 Mex. of which the fares amount to $10,919.59 and the freight receipts were $1,243.59.

SIBERIAN RAILWAYS.—Single track railways in South Siberia and Altai province have been proposed by the Russian Minister of Communications. The South Siberia line will start from the southern frontier of Altai Railway and connect with Nicholaisk and other Siberian points.

JAPAN'S LIGHT RAILWAYS.—Since the light railway subsidy law came into operation in August says the *Japan Times*, the charters obtained up to the middle of March reach a total of forty-seven, the lines contemplated extending for 827 miles at a cost of 38,936,000 *yen*. During the six weeks ending April 30th the light railway companies which obtained charters numbered eleven, the lines under contemplation reaching 146 miles, and the cost of construction being estimated at 5,195,000 *yen*. Besides the above other companies awaiting charters number over fifty. Of the companies which have already received charters, those whose cost of construction are estimated at over 1,000,000 *yen* number fourteen. Among these is the Bando Light Railway, which has under consideration a scheme for building 59.23 miles between Hachoji and Omama at a cost of five million *yen*.

MANILA RAILWAY CO.—The survey of a proposed line to connect Baguio with the northern trunk line of this company at about 35 kilometers south of San Fernando has been completed and estimates prepared. The completion of this branch will give direct railway connections between Manila and the Philippine summer capital.

PHILIPPINE RAILWAY GUARANTEE OF INTEREST ON BONDS.—A bill is now before congress providing for an amendment to the requirement in the original authorization that the issue of guaranteed bonds would only be made on 20 miles of completed line, so that in amended form the issue will be authorized on six miles of line.

SHENSI-HONAN RAILWAY.—The earthwork for a distance of 26 miles from Luyang in Honan is reported completed and bridges and stations are being built along the route. The line will be 160 miles long when completed.

THE LARGEST LOCOMOTIVE.—Engineering News describes the engine that holds for the present the record as a Mallet engine of the 2-10-20-2 class for handling 2,000 ton freight trains on long and severe grades.

The total weight of the engine is about 616,000 lbs., with 550,000 lbs. on the driving wheels (55,000 lbs. per axle), while the loaded tender (on six-wheel trucks) increases the total weight to 850,000 lbs.

The boiler is made in two sections united by a rigid separable joint. Beyond the smokebox is a tubular section 9 ft. long forming the superheater; this is divided into two compartments, one for superheating the live steam, the other for reheating the high-pressure exhaust on its way to the low-pressure cylinders. The firebox is of the Jacobs-Shupert type, without staybolts. The firebox proper and outer shell are each composed of pressed-steel channels, bent to horseshoe shape and riveted together through the flanges; transverse stay-plates or diaphragms of horseshoe shape are fitted between the two sets of channels, and are perforated to permit of free circulation in the water legs and over the crown.

These engines are notable for the size of their tenders, which are mounted on six-wheel trucks and have a total weight of 234,000 lbs. (including water and oil fuel). They are practically identical with those of the 4-4-6-2 Mallet passenger engines.

Three of these huge engines have been built at the Topeka shops of the Atchison, Topeka & Santa Fe Ry. by combining pairs of the 2-10-2 engines which have been a characteristic type on this road for some years. An order for ten new engines has been given to the Baldwin Locomotive Works.

OPENING OF THE CHUO-LINE.—An interesting ceremony at Nagoya featured the opening of this Japanese line connecting Hachioji and Nagoya, a distance of 224 miles representing an outlay of Yen 35,000.000 and fifteen years effort. According to the Kobe Herald there are 95 tunnels of a total length of 113,378 feet. The expenditure on the tunnels per foot is estimated to be -Y-91.25. The tunnel on Sasago Pass is 2 miles and 71 chains long; this is the longest tunnel in Japan. There are 350 bridges on the line, their total length being 24,265 feet, the cost per foot being -Y-170.68. The Torii tunnel is situated 3,189 feet above sea level, which is the highest point reached on any Japanese railway. There are 506 small bridges and 47 stations on the line. In short, the Chuo line traverses mountaneous and hilly country almost exclusively and in consequence the work of construction was very difficult.

THE ICHANG WANHSIEN RAILWAY—Referring to the progress made on this railway the *Peking News* states that there are 30,000 men employed; construction trains are working out of Ichang for several miles; one tunnel 1000 feet long has been pierced and another 6000 feet in length is under way. The earthwork is well up to Kweichow for a distance of 100 miles. At Ichang several hundred acres of land have been raised, numerous godowns, machine shops and station buildings erected, and a certain amount of bunding done at the wharves. The line runs inland from Ichang and comes out at the Yangtse river near Hsiang Ch'i, about 90 miles distant; it then follows the river for some 30 miles, when it will go inland again along a route which has not yet been finally determined upon. The country to be traversed is very mountainous, and it is estimated that the section to Wanhsien will take some 15 years to complete.

KIRIN—CHANCHUN RAILWAY—The estimated outlay for the current year is placed at yen 500,000 covering road and building construction and rolling stock. It is estimated that there will be a force of 50,000 coolies steadily employed during the year. A temporary mountain line is proposed over the Tumenling Pass to be used until the tunnel there is completed. Seventy per cent of the earthwork is reported completed and it is expected that the rails will be laid to Kirin by the end of the year. At present there are now in operation of the line 2-78- ten and 2-38 ton locomotives, 70 construction cars, 10-30 ton freight cars supplied from the Tongshan Shops.

SUPPLY OF RAILWAY MATERIAL.—Messrs. J. Reid and Co., Ld., England, have received and order for the supply of 500 cwts. of pig lead and 1,300 cwts. of white lead to the East Indian Railway.—The Anderson Foundry Company, Limited, have a large contract for the supply of 92,610 tie bars with cotters and keys to the same line.—The Vacuum Brake Company, Limited, London, have completed a large order for the supply of their vacuum brake fittings for rolling-stock to the Burma Railways.—Messrs. Glenfield and Kennedy, Kilmarnock, have supplied this line with five sets of washing-out apparatus for locomotive engines and Messrs. J. Blakeborough and Sons, Limited, seven 6-inch pillar water cranes for locomotives.—The Burma Railways have placed an order with the Metropolitan Amalgamated

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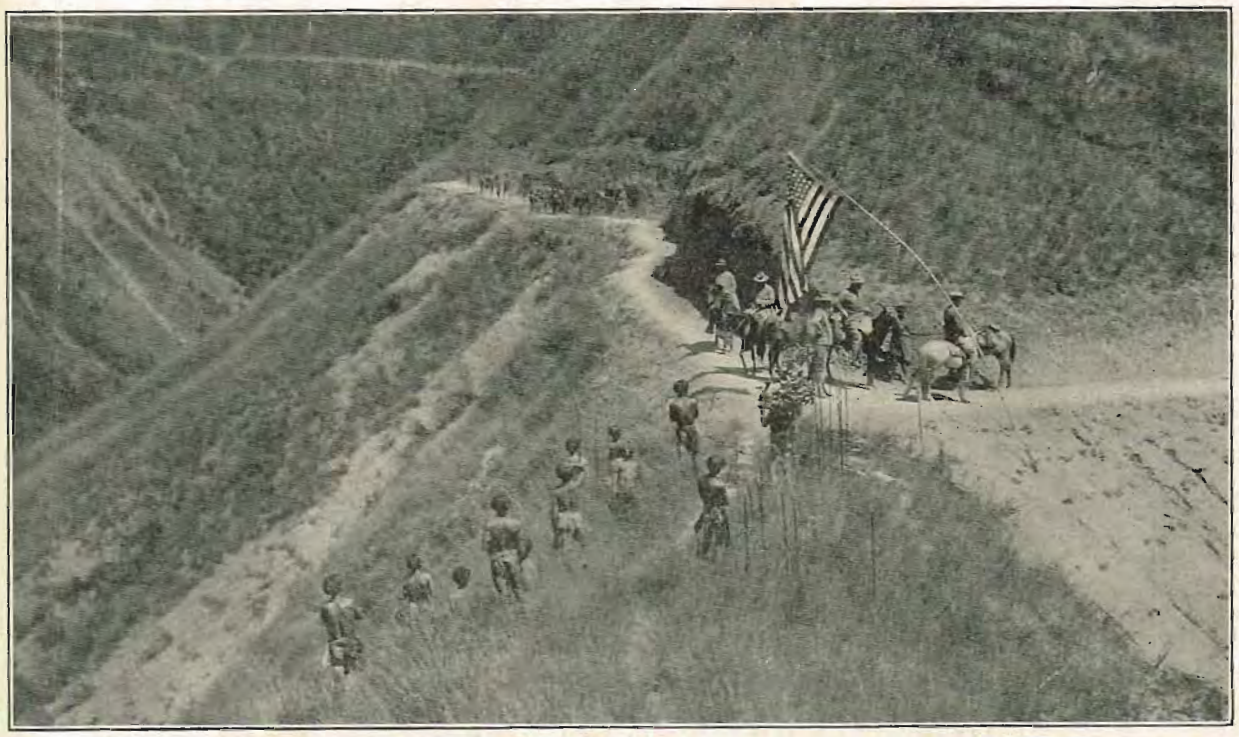


TYPICAL MOUNTAIN TRAIL

The Mountain Province and Nueva Vizcaya are now traversed by more than 800 miles of trail of this type. A "reception committee" of Ifugaos with an American flag have come out to meet the Secretary of the Interior and his party

A CONFERENCE BETWEEN THE SECRETARY OF THE INTERIOR, GOVERNOR OF THE MOUNTAIN PROVINCE, LIEUTENANT GOVERNOR OF THE SUBPROVINCE OF IFUGAO, AND HEADMEN OF THE DISTRICT OF QUIANGAN

Upon the annual inspection trips of the Secretary of the Interior there are held great representative gatherings of the several non-Christian tribes, at which the events of the past year and the plans for the coming year are freely discussed

Courtesy, Department of the Interior

The Hill Tribes of the Philippines

The Lanchow Mines

General News and Comment

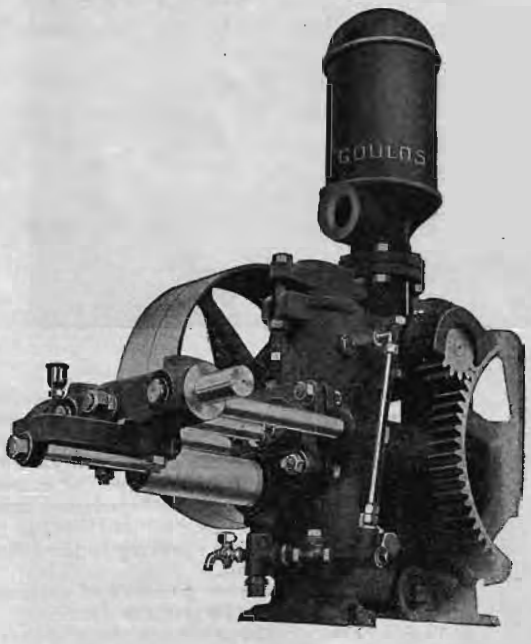
ENGINEERING
COMMERCE ❦ FINANCE

In this exhibit, to use the same water over repeatedly, and at the same time demonstrate the working of another Worthington product, the water from the receiving tank into which the weigher discharges is returned by a small motor-driven centrifugal pump to an elevated reservoir from which the water flows into the weigher. In this instance the reservoir is a Blake & Knowles open feed water heater for steam boilers, and while it is not used as in practice, there being no steam available to pass through it to heat the water, it does show the automatic valve control of the feed water flow.

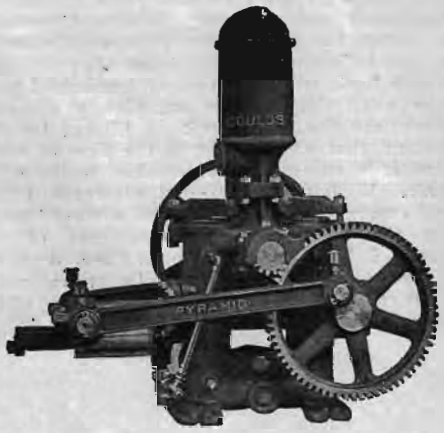
A striking thing about the little centrifugal pump, which is only 12 inches in diameter, but has a capacity of 30 gallons a minute is that it is so quiet and smooth running that it takes pretty close inspection to discover that it is really in operation. In fact, when it is running a dime may be stood on any level part of the pump without falling, showing the complete absence of vibration. Examples of the different types of Worthington meters are also exhibited and a motor driven Knowles triplex power pump.

GOULDS AIR CYLINDER FOR PUMP PYRAMID PUMP

The Goulds Manufacturing Company of Seneca Falls, N. Y., are placing on the market a special Air Cylinder for attaching to sizes 3 x 5 and 4 x 5 of their "Pyramid" Double-Acting Piston Pump when used for Pneumatic Water System Pumping.



This Air Cylinder does away with the necessity of a separate pump for maintaining the required air pressure in pneumatic tank systems. It is designed to operate against a pressure of 75 which is the maximum rating for the "Pyramid". Opening the air cock prevents the air from going into the tank and relieves the pump of all pressure when not required. Suction, discharge valves and cylinder are brass. Plunger is leather cupped, packed and operated by piston rod of pump. The cylinder bracket is rigidly held in place by the same bolts that hold the cylinder head. The design and manner of attachment makes this the most complete outfit on the market.



The pipe leading from the air attachment is connected to the drain plug opening or discharge chamber of the pump.

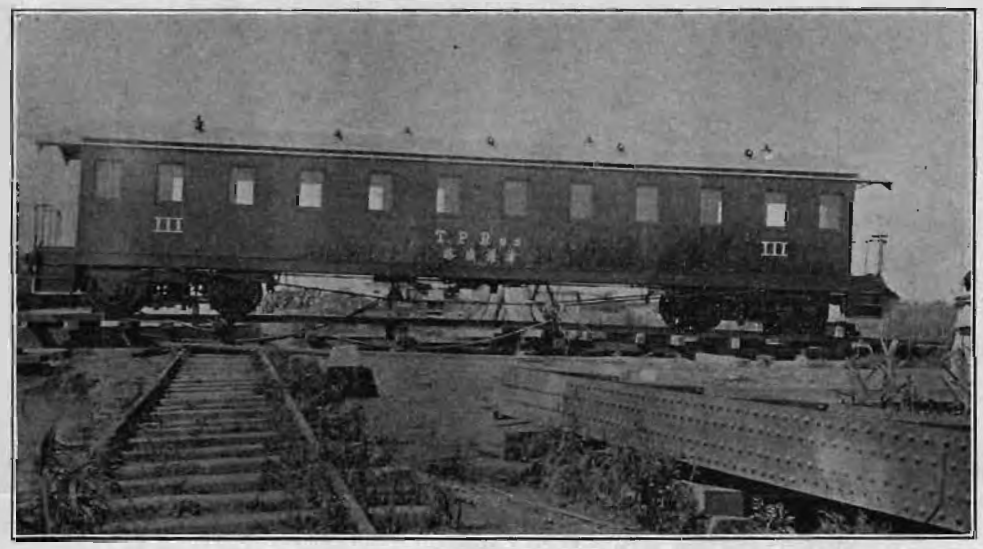
Where this attachment is used with the "Pyramid" Pump for supplying pneumatic tank systems it is possible to have running water throughout the house, stable or yard for all domestic purposes and for fire protection. The Air Cylinder attachment is known as Fig. 1567. The manufacturers will be pleased to forward complete circulars and prices to anyone upon application.

Coaches Built at the Woosung Shops for the Tientsin-Pukow Railway

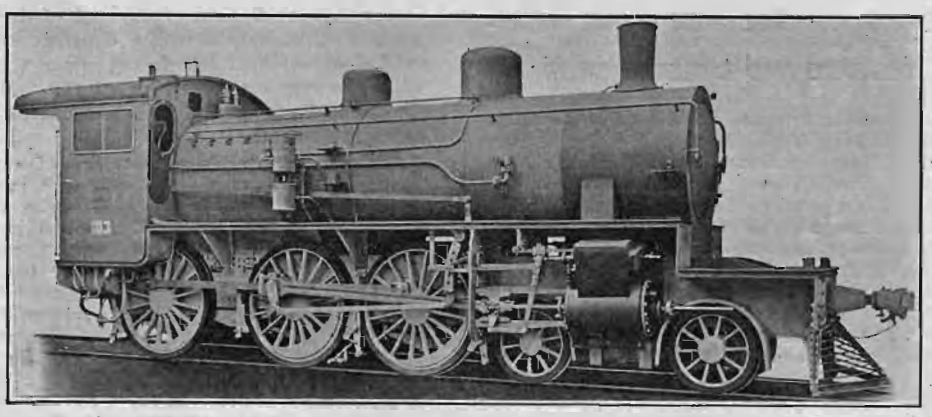
The accompanying illustration is from a photograph of the first of nineteen coaches being built at the Woosung Shops of the Shanghai-Nanking Railway. The first delivery included four coaches similar to the illustration and were transhipped across the Yangtsze on their own wheels, being the first time a coach has been taken acrosss water in China ready for the rails.

The water transportation across the river to Pukow from the Shanghai-Nanking Railway wharf was effected by lashing five Chinese junks together and leveling the tops with two 68′×14″. Oregon pine logs laid across, and on top of this construction the sleepers and rails were placed.

The temporary ferry thus constructed was then brought alongside the Shanghai-Nanking Railway Wharf and connected up with the wharf track so that the coaches were pushed on board by hand. Then the wheels were "scotched," etc., and the freighted ferry towed across to Pukow, joined up to the Tientsin-Pukow Railway track and the coaches run off by hand. These coaches were landed on the Tientsin-Pukow rails from the Shanghai-Nanking rails in fifty minutes. Two coaches were transferred on June 15 and three on June 23.



VIEWS OF COACHES BUILT AT WOOSUNG SHOP FOR THE TIENTSIN-PUKOW RAILWAY ON THE RAILS AND ON THE FERRY



4-6-0 PASSENGER ENGINE OF STANDARD GAUGE ON THE TIENTSIN-PUKOW RAILWAY BUILT BY HANNOVERSCHE MASCHINENBAU-ACTIEN-GESELLSCHAFT, VORMALS GEORG EGESTORFF, HANNOVER-LINDEN

Cylinder Diameter. . .	21.2 ins	Grate Area	28.0 sq. ft.	Weight empty	137000 lbs.
Stroke of Piston . . .	24.8 ,,	Heating Surface . .	2090 ,, ,,	Adhesion Weight . . .	106500 ,,
Driving Wheel Diameter	68.9 ,,	Working Pressure .	85 lbs.	Weight in Working Order	153500 ,,

THE FAR EASTERN REVIEW

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CHINA'S FOREIGN TRADE

We have to hand a copy of a review of China's foreign trade for 1910 by J. S. Chalmers, Statistical Secretary of the Imperial Customs, published in the Official Returns of Trade. Foreign imports are represented by Hk. Tls. 462,964,894 and exports by Hk. Tls. 380,833,328, making a total of direct foreign trade of 843,798,222, surpassing in value by Tls. 86,650,000 the year 1901 which is the highest recorded. According to Mr. Chalmers the increase is due largely to increased values. One item is opium where the increase represented Tls. 30,000,000 and another, cotton, Tls. 15,000,000. Increases are noted in trade through Hongkong by Tls. 33,090,000, with Japan by 27,000,000, with Germany by 12,000,000 and with Russia 6,000,000, while the only conspicuous exception is the falling off in trade with the United States by Tls. 8,000,000.

The high price of raw cotton, due to the shortage of the American supply, was responsible for the decline in importations of cotton frabrics from Europe and America. Japanese yarns and piece goods, manufactured from raw cotton imported from China and India, a d sold to China showed a remarkable increase respectively, 937,908 piculs of yarn compared with 674,654 piculs in 1909 and 2,389,693 pieces of varied piece goods compared with 1,396,297 in 1909, giving some idea of the activity of the Japanese.

The iucrease in tea export aggregated 62,000 piculs of which Great Britain took 35,000 piculs, or 46% more black tea than in 1909, while the United States took 35,500 piculs or 42% less black tea and 27,000 piculs or 23% less green tea, making a decreased American purchase of 31%. To Russia there was an increase of 57,000 piculs or over 6%.

There was also a falling off in the export of beans to the extent of 3,500,000 piculs. The exports of raw cotton amounted to 1,247,000 piculs, about double that of the previous year. Reference is made to the development of cotton manufacture in North China which now involves 33 mills with an aggregate of 900,000 spindles and 4,000 looms the output of which represented 272,000,000 yards of sheetings and drills.

The foreign imports of Tientsin and the open port of Chingwangtao increased Tls. 10,000,000 compared with 1909. This was largely due to the increased importation of Japanese cotton, railway materials, and military equipment. The total trade of Chihli ports reached Tls. 109,587,893 and of Shangtung, Tls. 72,776,000. The Yangtsze trade reached Tls. 293,756,591 notwithstanding the poor crops and the embargo on food stuffs in the early part of the year. The striking feature of the year's trade was an increase of Tls. 11,000,000 in the valne of export trade from Hankow. Shanghai's participation showed an expansion due to the advance in opium prices and the remarkable increase in the shipments of raw cotton.

The Kwangtung and Kwangsi ports yielded a total in trade of Tls. 280,660,178.

THE NATIONALIZATION OF CHINESE RAILWAYS

When the edict issued directing the early nationalization of China's trunk lines, doubt was expressed in many quarters of its feasibility, and predictions made that the scheme would meet with such serious opposition that the central government would be unable to enforce its authority. From present indications Peking continues firm in her resolve and notwithstanding the activity of provincial agitators against the measure, the preliminary work is under way and it is expected by October that effective plans for the transfer of private railway interests to the Federal government will be submitted to the conference of railway directors of the Empire to be held in Peking that month. As indicative of the prevailing foreign sentiment with respect to the nationalization we quote the following from the *Shanghai Times*.

"The decision of the Central Government to take over the control of the trunk lines of railway was not reached a day too soon. It must have been decided upon after careful enquiries had been made as to the progress of the work undertaken by the provincial companies, for since these companies have been entering their protests against the proposed action the Government has been ready with arguments to refute every statement made. It appears that the Canton provincial company succeeded in selling shares to the amount of about forty million dollars, of which about twenty million have been paid into the treasury of the company. All of this sum has been spent, and the construction of less than a hundred miles of railway is the only result. This provincial company had also a large amount of material at its disposal which was left over by the American-China Development Company. In the case of the Hunan provincial company, about five million dollars was raised, and every cent of it has been expended in the construction of thirty-five miles of railway, and the company has still several large debts outstanding. It is not known how much money was raised by the Szechuan Railway Company, but the amount is supposed to be about ten million dollars; of this large sum, three or four millions were lost in Shanghai, through the failure of Chinese banks and the speculation in rubber of the man who had the funds in charge. The situation in other Provinces has not been so bad, and it must be said to the credit of the Kiangsu Railway Company and of the Chekiang Railway Company that, as far as is known, their affairs were handled with honesty and discretion. The difficulty in the case of the three Provinces mentioned above is that there seems to be no source of financial authority to which the officers of the companies felt themselves responsible. They were only indirectly recognized by the provincial governments, and the shareholders were so widely scattered that the election of directors was little more than a farce. It was found easy for designing persons to secure election or appointment to lucrative posts, and instead of these provincial enterprises being conducted more honestly or efficiently than similar official undertakings, the contrary has been the case. Even in the most flagrant instances, officials have had their official standing to act as a check upon rapacity; but in the case of the gentry (who are only retired officials), there has been no restraint, and such peculation as has been unknown in the modern era of China has been the result. We do not believe that these serious charges against the provincial companies can be considered a reproach to the Chinese Government or the people, for, on the one hand, the Government had no control, and on the other hand, the people were not organized to exercise supervision. These provincial railway companies which we have mentioned have been conducted with gross carelessness, and it was quite time that Government stepped in to take control of them. There need be no occasion for alarm at the attitude of opposition to the Government which has been so loud-spoken in these three Provinces, for it is to be expected that the men who have been responsible for the failure of the provincial companies should fight strenuously in their own interests. The Central Government seems to have no misgivings as to the reasonableness of its position, and the only thing that remains is for proper compensation to be paid by the Government to the stockholders of the provincial companies. It cannot be expected that the Government will pay in full all the money which has been squandered. It will be sufficient if careful estimate is made of the value of the property which these companies are able to turn over to the Government and this amount should be paid in full to the shareholders. It is inevitable that there should be a serious loss to the shareholders; but for the condition which

have allowed this loss they must hold themselves responsible. The Government can only purchase from the companies, at an equitable appraisement, the property of which they are in possession. This experience in railway construction is a severe blow to the growth of the influence of the people in governmental affairs, but we believe that the sturdy honesty of the people will support the Government in its determination to oust the demagogues who have been feathering their own nests at the expense of the public."

This opinion is shared more and more by progressive Chinese leaders as the result of investigations made by Peking are disclosed. The successful flotation of the Hu-Kwang loan at a premium also demonstrated that the nationalization scheme as proposed greatly strengthened China's credit abroad, and with the better understanding of Peking's purpose to protect every interest involved, the influence of the selfish agitators grows less and less.

EL BANCO ESPANOL FILIPINO

The semi-annual report submitted to the directors by President John S. Hord of the Banco Español Filipino of Manila is indicative of the continued prosperity of that institution and reflects the generally improved conditions of trade and industry throughout the Philippines. The net earnings for the term amounted to ₱212,184.89, equal to a dividend of 7% on the bank's shares issued which is ₱3,000,000. Out of this amount, however, a 5% dividend was paid, ₱35,728.29 transferred to legal reserve fund, ₱10,575.51 to voluntary reserve fund and ₱15,881.09 to the executive officers of the bank and representing 9% of the net earnings. The legal reserve is now ₱531,070.99 with circulating notes to an equal value. This represents practically double the amount of paid in capital of the bank a year ago. Deposits and other accounts have also increased materially. Commenting on the sugar situation President Hord refers to the stagnation due to the large sugar crops in Cuba and Germany but which was relieved by several sales at fair prices and better indication for July. (This has already been realized.) The bank's branch in Iloilo were enabled to see their clients through the critical period.

Of the hemp and cigar situation he says:

"The hemp situation is still most confusing, and only concerted action amongst those interested, or government intervention, or perhaps both together, will serve to avert a still more serious situation. Late advices from the United States indicate a revival in the Philippine cigar sales in that country. But the improvement will be gradual."

Mr. Hord pointed to the steady healthy growth of the exterior trade of the islands with few boom features which, he writes, "some might wish for, but which sounder judgment would condemn because of the constant danger of collapse."

Mr. Hord recommends to the wholesale merchants a credit system based on clearing house methods to overcome misrepresentation of resources and liabilities on the part of some retailers. He says:

"Some of the larger import houses have been much harassed by their inability to understand the bookkeeping of a certain influential section of the retailers, as well as by actual misrepresentation of resources and liabilities on the part of some of their customers. This has resulted in curtailment of credits by the importing houses as a measure of precaution. There is but little doubt that sooner or later a system based on the clearing house methods will be established whereby both the large importer and the small retailer doing a legitimate business will be protected against the unnecessary loss due to the present anomalous condition of affairs.

"Amendments to the law codes of the islands with respect to false representations as to resources and liabilities, and regarding attachment for debt, etc., would help to clarify the situation. Much good is expected to result from the endeavors, now taking form, of the various mercantile associations to work together to common ends in such matters where their interests are not necessarily opposed. The co-operation of the government, through necessary legislation and administrative action, with the commercial interests of the islands is assured.

"The lumber industry shows a healthy activity, the local demand being, in fact, greater than the supply."

CHINESE-AMERICAN COMPANIES

The advancement of Chinese-American trade relations has proven a popular movement among leading Chinese financiers and merchants since the memorable visit of the Pacific Coast commercial delegation in 1910. The outcome up to the present writing is one proposal to establish a Chinese-American bank with a capital of $10,000,000 with branches throughout the Empire and the United States, the capital to be furnished by Americans and Chinese in equal portions with equal representation on the board of directors. Owing to the serious financial situation in China, due to the rubber boom, the organization was deferred, but new interes is now being taken in the project and there is every prospect of its going through.

In addition to the bank the prospectus of Chinese-American Steam Navigation Company has been issued which provides for the taking over of the new 8,600 ton steamer now being built for Captain Robert Dollar and in addition the raising of $600,000 of capital. The company has been registered in the Board of Posts and the Board of Commerce at Peking as a limited company. The agencies of the Robert Dollar Steamship Co. are to be utilized by the new company.

These two companies will no doubt be the forerunner of many more as there is a growing interest among Chinese in the expansion of trade with the Pacific Coast. The proposed visit of representatives of 46 Chambers of Commerce of China to the United States in October will probably give added impetus to this intertrade movement. The Chinese Government is reported to have arranged to pay the cost of the expedition to and from San Francisco.

*PHILIPPINE OPPORTUNITIES

The Philippine Islands present to energetic, capable and enterprising people an opportunity which it would be hard to find anywhere else in the world. Here is a soil and climate capable of producing abundant harvests; here are a vast number of people under paid, underfed and never yet given an opportunity to acquire those things which are usually obtained under the American flag and unable to acquire a standard of living such as the Americans are accustomed to provide for people whom they employ. All that is necessary to greatly benefit the condition of the Filipino and at the same time reap a profit more than commensurate with the risk and effort is the application of capital and brains to the work.

Here is about ten per cent of the population of the United States in a country that can produce things which cannot be produced in the United States. People in America can afford to pay more for their luxuries than can any other people because the rate of wages is higher in the United States and many of the things deemed to be luxuries in other countries are of general consumption there because the average rate of living is high. The poorer people in the United States are accustomed to live better than are the poorer people of other countries, and as a result there is a wider market for such things as sugar, coffee, chocolate, tea and rubber.

The Philippine Islands have the advantage given by the tariff that they can admit their products to the United States free of duty whereas other countries have to pay. This gives the Philippine Islands a preference over any other country and enables us to get a better price for our products here.

With these advantages there is no reason in the world why the Philippines should not produce a very large proportion of the tropical products consumed in the United States.

The attitude of the Government is that of favoring the establishment of new enterprises; we welcome the coming of capital; we fear it not. The laws are such that undue combinations can be controlled and the Philippine Islands under their present form of government are not liable to abuses by corporate control. On the contrary, the Government is more inclined to fear the result of capital not coming to the Islands. Even with the advantages given us by the tariff, it is necessary that Philippine labor should be made effective and economical to compete with other countries. The tariff advantage will not compensate for the loss of one-half of the sugar crop by reason of faulty methods of treatment of the cane; it will not make up for the lack of irrigation, lack of ports, lack of roads, lack of machinery, lack of labor-saving devices and lack of modern methods of finance and conduct of business.

In order to avail ourselves of the lower tariff we must still adopt all those measures which modern concerns in modern countries have found necessary in order to compete in the markets of the world. We cannot afford, for instance, to let a large proportion of our tobacco crop spoil by reason of allowing the leaves to be wet by the rain while drying, we cannot afford to neglect those precautions which are necessary to keep the worms out of the leaves of our crops; we cannot afford to lose our credit by permitting adulteration of the products of the Islands, for instance, in hemp bales by placing the best quality on the outside of the bale and the poorer on the inside which has the effect of creating distrust in the minds of all purchasers of hemp and depreciates the price which producers can expect to realize.

We must take those measures which will put an end to these conditions and let people know that business in the Philippine Islands is conducted on the square; that our goods are as represented; that adulteration is not only frowned upon but not permitted, and that we make ourselves the agents of our clients and look after their interests as if they were our own.

The Government is ready to do its part in the establishment and carrying on of such a policy and the active and vigorous Merchants' Association will also do its share in bringing it about.

*By His Excellency, Governor General W. Cameron Forbes, in the Merchants' Association Review.

The Manila Electric Railroad & Light Company and Filipino Labor

The efficiency of Filipino labor, as demonstrated under favorable conditions of employment and direction, is the subject of an interview courteously accorded the FAR EASTERN REVIEW by General Manager C. B. Graves of the Manila Electric Railroad and Light Co. in which he offers his conclusions after six years experience in charge of the operation of the extensive railway system and light and power distribution in Manila. He said:

"I would say from our experience here that the general class of Filipino operatives are satisfactory, but they require considerably more supervision than a similar force at home. This supervision must be of a high order and the Americans and Europeans employed for this purpose must be competent in their respective lines, familiar with the native dialect, and have a working knowledge of

CONTRACTING NEWS

BIDS OPENED AND CONTRACTS AWARDED

U. S. CHIEF Q. M., MANILA.—Conduct and electrical fittings, including 32,485 lbs. iron bushings, outlet boxes, locknuts, covers and 27,000 feet of conduct.—Contract awarded Frank L. Strong, price $3,116.75. The other bidder was Messrs. Germann & Co., price $3,197.90.

U. S. NAVY, MANILA.—50 h p., D. C. 650 r. p. m. Motor.—Contract awarded Castle Bros.,-Wolf & Sons (Fairbanks, Morse & Co.'s motor), price ₱1,380. The other tenders were: F.H. Thompson, ₱1,593 (Westinghouse Manufacturing Co.); Messrs. E. C. McCullough & Co. ₱1,600 (unknown); Germann & Co., ₱1,750 (Siemens & Schukert); Frank L. Strong ₱1580 (Central Electric); the Electrical Supply Co., ₱1,200.

U. S. Q. M. D., MANILA.—10-ton locomotive crane.—Contract awarded Frank L. Strong, $6,275 (Brown's Hoisting Machinery Co.). The other tender was that of Messrs. Castle Bros.,-Wolf & Sons, $9,700.

U. S. Q. M. D. WATER TRANSPORTATION.—Air Compressor, etc.—Contract awarded F. L. Strong $350 for 4½x 4½ (duplex vertical Gardiner). The other tender was that of Messrs. Castle Bros.,-Wolf & Sons, $387 (Duplex Ingersoll-Rand).

CHIEF Q. M. D, MANILA.—One Hydraulic Ram Press for masking saw dust blocks, 10 p. m. electrically driven with pump attachment.—Awarded Frank L. Strong, $2200 (Watson Stillman & Co.). There was only one tender.

CITY OF MANILA.—Furnishing and installing sewer pumping plant in the port district comprising 2 3 h. p. vertical motors directly connected to 4" vertical-centrifugal pumps complete with starting panels.—The only tender was that of Frank L. Strong and the price ₱10,600 to supply General Electric motors and International Steam Pump Co.'s pump, the same as installed in the other city pumping stations.

CHIEF Q. M. D., MANILA.—(1) 3 15 h. p. vertical, tubular boilers. (2) 4 25 h. p. portable tubular boilers. (3) 2 40 h. p. portable tubular boilers. (4) Laundry Machinery. The tenders were as follows:

Frank L. Strong, (1) $238; (2) $616; (3) $815. Castle Bros.,-Wolf & Sons, (1) $262.50; (2) $550; (3) $750. Fred Wilson & Co., (1) $360; (2) $662, (3) $850. Lambert & Springer, (1) $505. Frank L. Strong, (4) total $1480 (American Laundry Machine Co.). Other tenders were submitted for part of No. 4.

U. S. MEDICAL SUPPLY, MANILA.—One Buffalo Steel Plate planing mill exhauster.—Germann & Co. $55, F. H. Thompson $104 50, Frank L. Strong $100.—Both contracts awarded Frank L. Strong.

MUNICIPALITY OF SHANGHAI.—Overl ead Traveling Crane.—Messrs. Babcock & Wilcox received the contract at £920. The other tenders were:

	£.	Weeks.
Chatteris Engineering Co.	923	12
Sir Wm. Arrol & Co.	979	23
Carrick & Ritchie	990	15
Higginbottom & Mannock	1,058	14
Stothert & Pitt	1,080	21
Booth & Brothers	1,085	13
Royce & Co.	1,120	12
Cowans, Sheldon & Co.	1,175	22
Vaughan & Sons	1,206	15
Craven Brothers	1,300	16

Q. M., MANILA.—25,000 Gallons Lubricating Oil.—Vacuum Oil Company at from 50 to 95 centavos per gal.

CHIEF Q. M., MANILA.—1780 Coils of Rope.—Contract awarded the Johnson-Pickett Co., Manila. Price ₱0.154 per pound.

MUNICIPAL BOARD, MANILA.—475 tons cast iron pipe, 73 tons cast iron specials, 15 tapping valves, 64 gate valves and 100 fire hydrants.—Successful bidders were Messrs. H. W. Peabody & Co. and Finlay Richardson & Co.

PHILIPPINE GOVERNMENT.—Supply of Oregon pine and redwood for six months ended December 31, 1911.—The successful bidders were Messrs. Norton, Harrison & Co. The contract is valued at ₱60,000.

CITY OF BANGKOK.—Installation of Filter Plant, Water Works.—Awarded The Jewell Export Filter Co. of New York, London and Calcutta.

PHILIPPINE GOVERNMENT.—15000 metric tons of Coal.—The following tenders were submitted:

Messrs. Macondray & Co., Inc., Wallsend coal, Manila ₱10.83, Iloilo ₱12.05, Cebu ₱12.05, Tacloban ₱12.57, Romblon ₱12.57, Jolo ₱13.82, Zamboanga ₱12.32, Balabac ₱13.95, P. Princesa ₱13.95. This company also bid on Japanese Ochi lump coal as follows: Manila ₱10.05, Iloilo ₱10 62, Cebu ₱10.62, Tacloban and Romblon ₱10.52, Jolo ₱13.56, Zamboanga ₱11.84, Balabac and P. Princesa, ₱14.55.

Messrs. W. P. Stevenson & Co., Ltd., bid on West Wallsend as follows: One cargo of 5,000 tons Manila, September delivery, ₱10.44, one cargo 5,000 tons, 10 weeks notice, ₱10.68. One cargo for provinces (5,000 tons) ten weeks notice, Iloilo and Cebu ₱11.71, Tacloban and Romblon ₱12.45, other ports ₱16.45.

C. B. Williams offered three bids as follows: Pacific coal, Manila ₱9 75, Iloilo ₱11.00, all other ports ₱11 49. His bid on Southern Australian coal, Mount Pleasant, etc., was: Manila, ₱10.84, Iloilo ₱12.09, all other ports ₱12.58. Hetton coal was offered by this bidder as follows: Manila ₱11.09, Iloilo and Cebu ₱12.34, all other ports ₱12.83.

The Mitsui Bussan Kaisha, Ltd., bid on Milke washed nut as follows: Manila ₱9.50 Iloilo and Cebu, ₱11.50, Tacloban and Romblon ₱12.45, Zamboanga and Jolo ₱13.60, Balabac and P. Princesa ₱18 30.

U. S. GOVERNMENT.—Carrying of Supplies from Pacific Coast to the Philippines—Contract awarded Messrs. Dodwell & Co. of Beattle Blue Funnel Line. Tenders follow:

General merchandise: Waterhouse & Co., $2.43; Dodwell & Co. $2.25; winter rate, $2.75. Coal: Waterhouse & Co., $5.00; Dodwell & Co., winter and summer $3.00. Lumber: Waterhouse & Co., $6.45; Dodwell & Co., summer rate $6.00; winter rate $6.75. Heavy weights, 7000 to 12000 pounds: Waterhouse & Co., $10.00; Dodwell & Co., $8 00.

U. S. Q. M. DEPARTMENT—Distribution Box Boat.—The contract was awarded W. S. Bailey & Co., the price being $11,365 U. S. C. delivered at Hongkong. This vessel will be fitted with a 100 h. p. engine supplied by The Gas Engine & Power Co. and Chas. L. Seabury & Co. (Consolidated) of New York City through their agent, Frank L. Strong, Manila.

PROPOSALS INVITED

DIRECTOR GENERAL OF POSTS AND TELEGRAPHS, BANGKOK.—Tenders will be received up to August 1, 1911, for the furnishing of 50,000 Kilograms of galvanised iron telegraph wire of 4 millimeters diameter, in coils of about 50 kilograms.

10,000 Insulators with protective enamelled iron caps.

10,000 galvanised swan neck bolts with screw ends and felt washers.

BUREAU OF PHILIPPINE CONSTABULARY.—Tenders will be received up to November 1, 1911, for the furnishing of 200 capes, hoods, Khaki.

Christian inhabitants to such a point that the practicability of civilizing them might be conclusively demonstrated, and that the importance of doing it might be so fully established that the work *could not be dropped*. The progress already made by the Bukidnons and the Igorots of Benguet indicates that the day may come when these and similar non-Christian tribes can safely be allowed to manage their own affairs, if protected from interference from without. Whether or not it will be possible, in the reasonably near future, to relinquish full control over such people as the Moros, Ifugaos, Kalingas, Bontoc Igorots, and the wild Tinglans of Apayao remains to be seen, but to turn these or any non-Christian tribes over to Filipino control at this time would inevitably mean the speedy loss of many of the important results already achieved.

"In quieting the f ars of members of the more pacific tribes who have been assured by Filipinos that American control would be only temporary, and threatened with future punishment when it should terminate, I have repeatedly assured these simple people of my conviction that the American Government, having once undertaken their protection, would not desert them, and I earnestly hope that such a deplorable course may never be seriously contemplated."

The illustrations accompanying this article are published by courtesy of the Department of the Interior, Philippine Islands.

FAR EASTERN RAILWAYS

ROYAL SIAMESE RAILWAYS.—According to the *Bangkok Times* tenders were recently opened for the supply of permanent way accessories for the Southern line comprising 1,675 tons of fishplates, 280.1 tons of fish bolts and nuts, 1,029.5 tons of rail spikes, 9.5 tons of spring washers, and 596.2 tons of bearing plates; and quotations were asked for c. i. f. to Penang, Singora or Bandon, and Bangkok, and f. o. b. price nearest shipping port.

Thirty-one tenders were opened, of which sixteen came from British firms, seven from German firms, six from Belgium, one from France and one from Japan. Eight tenders were received from Bangkok firms as tenderers or agents. Mr. H. Gittins, the Controlling Engineer, opened the tenders.

LOCOMOTIVES FOR JAPAN.—The contract for the supply of 12 tender-locomotives with superheaters for the Railway Board of Japan placed with the Borsig Works, Germany, is to be delivered on record time. The entire order was completed in 66 working days, the first of the engines being turned out by the works in 47 days.

MUKDEN - VLADIVOSTOK LINE.—Advices from Peking are to the effect that the Board of Communications has approved the project proposed by the Russian Government for a Russian-Chinese line connecting those two p ints directly. The company proposed will have a capital of 5,000,000 roubl s.

BRITISH ENGINEER-IN-CHIEF FOR HUPEH-HUNAN RY.—A report from Peking under date of June 22 announces the appointment of A. H. Collinson, M. Inst. C. E., Engineer-in-Chief of the Hupeh-Hunan section of the Canton-Hankow Railway which, according to the terms of the Hu-Kwang loan, is to be constructed under British direction. Mr. Collinson

is one of the leading British engineers in China and a well-known railway authority. He was chief engineer during the construction of the Shanghai-Nanking line and has since been associated with the road as consulting engineer and engineer-in-chief. His selection as chief of the engineering staff of the Hunan-Hupeh section will assure construction consistent with the best British standards and practice.

CHINESE EASTERN RAILWAY.—The report of the line for the year shows a gross income of yen 17,000,000 and expenditures amounting to yen 15,700,000.

SOUTH MANCHURIA RAILWAY.—The net operating revenue for the last half year amounted to yen 3,075,324.00 which with yen 1,803,855.72 carried forward made yen 4,879,179.72 available for distribution as follows:

Legal reserve fund	153,766.20
Dividend for shares owned by the Government	1,000,000.00
Dividend to shareholders other than the Government (6 per cent.)	60,000.00
Special reserve fund	1,000,000.00
Bonuses and social expenses	200,000.00
Sum carried forward	2,465,413.52

Out of the revenues 410,000 yen were spent fighting plague and the interest on £10,000,000 debentures was also an extraordinary expense that tended to reduce the net returns.

INDO-CHINA-SIAM RAILWAY.—The proposal of the two governments to connect their respective systems has met with favor and it is understood that the King of Siam has entered into a loan agreement with French bankers for this purpose. The line is to be an extension of the Saigon-My Toh section to Pnompenh and from Pnompenh to Battambang. The completion of these sections will bring the line within 75 miles from Patriew. Besides connecting Saigon with Bangkok, with the completion of the Peninsular line, Singapore will also be linked up in this comprehensive system.

AUSTRALIAN TRANSCONTINENTAL LINE.—The federal government of Australia has decided to construct the line connecting Port Augusta and Kalgoorie as a standard gauge railway (4′ 8½″) and later adapt the same gauge to all Australian lines.

JAPAN'S RAILWAY TUNNELS.—The difficult character of the country traversed by railways is emphasized by the extensive tunneling found necessary. One tunnel of the Central Eastern line is 15,275 feet in length or approximately three miles. Of tunnels over 2,000 feet in length there are 26 aggregating 115,387 feet or a total of over twenty miles.

PENANG HILLS RAILWAY.—The *Straits Echo* announces that the work of construction on this line will begin within three months. The estimates submitted by Engineer Bach placed the cost at $60,000 including the purchase of old plant, etc., and that the net revenue will be $12,000 annually.

THE SHANGTUNG RAILWAY CO.—The report for 1909 shows an increase in revenue from $3,400,000 to $3,700,000 equal to 9% compared with the previous year, while the expenditure increased from $947,339 to $999,723 or over 5.½%. There are 436 kilometers in operation and the freight, comprised principally of coal, represented 769,192 tons as against 641,279 in 1909, while the passengers carried numbered 654,128 compared with 641,279 in 1909. The total of net profits available for distribution, including 124,390 marks brought forward from previous account, were 4,696,229 marks disposed of as follows: reserve fund, 228,591 marks; special reserve, 228,591 marks; 6½ % dividend, 3,510,000 marks; preferred shares, 7.50 marks each, 405,000 marks, and balance forward of 182,580 marks.

SZECHUEN RAILWAY REDEMPTION LOAN.—The Peking government is now prepared to take over the property of the provincial company and will float a foreign loan for Tls. 10,000,000 for that purpose.

A. H. COLLINSON, M. INST. C. E.
Recently appointed Engineer in Chief of the Hunan-Hupeh section of the Canton-Hankow Ry.

TRAVELING RAILWAY LIBRARY FOR JAPANESE LINES.—The Japanese Railway Board has decided to place a library on all the express trains of the Tokaido line and extend a system of libraries throughout the country for use of passengers.

SIAM'S NORTHERN RAILWAY.—According to the Bangkok *Daily Mail*, the Northern line has been completed to Sala Me Puak and trains are running regularly to that point, but now it is in contemplation to extend the line about four miles to the Northwest to a place called Den Chai, and make this the terminus for the railway for the present. From Den Chai a road will be made to Phrae by the Government, and motor cars and motor lorries will be run on this to carry passengers and freight in connection with the trains. The ground between Den Chai and Phrae is practically level and the cost of a road will be much less than that of one from Sala Me Puak to Phrae.

The Railway Dept. also prefers Den Chai as a terminus as it is a broad level plain giving plenty of room for the construction of sheds and tracks for the railway yards, whereas the level space at Sala Me Puak is too confined. The expense of levelling more ground at the latter place would also be somewhat heavy.

The above plans are not absolutely settled yet, but they find favor with the high officials, so there is but little doubt that they will soon be carried through.

ACKLEY BRAKE EXPANSION.—This company has established agencies in Argentina and Brazil where Mr. Griffin S. Ackley has just concluded a successful business trip. The initial orders covered over 850 brakes for the tramways of the principal cities of South America.

In Australia, the Ackley Adjustable Brake is meeting with favor. An order was recently placed by the Adelaide Tramways Trust for the equipment of 50 cars with the Ackley brake, superseding the old style brake in use there. Substantial orders have also been placed in Japan. Mr. Ackley is at present on a trip to Europe where he established an agency at Milan, Italy, and organized a German Ackley Brake Agency.

CHINESE MANAGING DIRECTORS APPOINTED.—Peking advices are to the effect that the following appointments are under consideration: Wang Hsiao-cheng, managing director of the Hupeh section; Li Pao-hsun, of the Hunan section; Yew Liang, of the Szechnan section, and Feng Ko-chun of the Canton section. Director General Tuan Fang is said to have approved the appointments.

CHANGCHIAKAO-KULUN RAILWAY.—We are advised that the survey of this line has been completed and that upon approval of final location work of con truction will begin immediately.

SUPPLY OF RAILWAY MATERIAL.—The Gloucester Railway Carriage and Wagon Company, Limited, England, have a contract for the supply of ten sets of metre gauge carriage underframes to the Assam-Bengal Railway. Messrs. Owen and Dyson, Limited, have an order for the supply of 20 pairs of steel wheels and axles which are required for these carriages. The Vacuum Brake Company, Limited, Queen Victoria Street, London, E.C., have supplied one thousand rolling rings, indiarubber, to the Burma Railways Company; Messrs. W. and T. Avery, Limited, Weighing Machine Makers, have in hand an order for the supply of six self-contained weighbridges and one combined weighbridge to this railway. The Heart Accumulator Company, Limited, had a large order for the supply of train lighting cells and acids to the East Indian Railway Electrical Department, and Messrs. J. Stone and Company, Limited, have an order for the supply of a complete train lighting equipment. The Birmingham Battery and Metal Company, Limited, Birmingham, have complied with an order for the supply of one thousand brass locomotive boiler tubes to the Bengal-Nagpur Railway. Messrs. J. Reid and Company, Limited, had a contract from this line for the supply of eight copper firebox plates for locomotives; and Messrs. Geo. Turton, Platts and Company, Limited, for the supply of 1,500 volute springs for rolling stock. Messrs. Dean, Smith and Grace (1908), Limited, Keighley, have supplied the Bengal-Nagpur Railway with a capstan lathe; and Messrs. John Lang and Sons, Lathe Makers of Johnstone, North Britain, some lathe chucks. Messrs. Cammell, Laird and Company, Limited, Victoria Street, Westminster, S.W., and proprietors of the Cyclops Street and Iron Works at Sheffield, had supplied this line with three dozen steel tyres for locomotive engines; and Messrs. Geo. Spencer and Moulton, Limited, have a contract for the supply of 500 indiarubber springs. The Birmingham Railway Carriage and Wagon Company, Limited, have a contract from the Burma Railways for the supply of the following 20 steel bogie underframes for the construction of third class passenger carriages, two spare bogie trucks and 270 bogie pivots. The Edison and Swan United Electric Light Company, Limited, Queen Street, London, E.C., and Messrs. Dorman and Smith, Limited, have supplied a quantity of electric light fittings to the Bengal-Nagpur Railway. The Brush Electric Engineering Company, Limited, England, had an order from the same line for the supply of a motor frame and switch pillar; and the Lancashire Dynamo and Motor Company, Limited, for a motor frame and control gear. Messrs. Siemens Brothers' Dynamo Works, Limited, have supplied a quantity of electric wire to the Bengal-Nagpur Railway. —*Railways and Shipping.*

PHILIPPINE MINING NEWS

THE BENGUET CONSOLIDATED.—The return for the month amounted to 99.5 ounces.

THE HEADWATERS MINE.—Mr. F. L. Cole, of Messrs. Cole & Hanlon, mining engineers, has assumed charge of the Headwaters plant in Benguet as consulting engineer. The installation is now complete and a few test runs have been made but no definite reports as to when the plant will be in full operation has been received.

THE MANCAYAN COPPER.—The work on the Chambers Group is still progressing. The crosscut has been driven about 655 feet and the owners anticipate an early contact with the main body. This is the only development work at present under way. We have been informed that foreign inquiries are being received and should the result of the work on the Chambers group meet expectations there is little doubt but that the properties in that section will soon be undertaken.

THE FAR EASTERN REVIEW

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THE VIOLATION OF THE "OPEN DOOR"

BY

CHINA

The Reasons Why It Is Impossible For American Manufacturers Of Railway Materials To Secure Fair Play Under The Present Conditions Of Awarding Tenders

By GEO. BRONSON REA

The Kung-Pao Sheng-Hsuan-Huai
Minister of Posts & Communications

Who Has The Power To Enforce The Plain Terms Of Railway Loan Agreements, Conceding Equal Opportunity To The Manufacturers Of All Nations, Repeatedly Ignored In Favor Of Special Interests.

WILL HE DO IT?

BLL 111010

THE FAR EASTERN REVIEW
COMMERCE • ENGINEERING • FINANCE

VOL. VIII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, AUGUST, 1911 No. 3.

THE VIOLATION OF THE "OPEN DOOR" BY CHINA

The Reason Why it is Impossible for American Manufacturers of Railway Materials to Secure Fair Play in the Awarding of Tenders Under Present Conditions

By GEO. BRONSON REA

FOREWORD:—

Prior to the Russo-Japanese War, American trade in cotton goods predominated in Manchuria, American flour found a good market and other American staples figured largely in the trade of China. Conditions have since altered, and American piece goods have given place to the produce of Japanese looms, American flour has disappeared before the competition of the native milled wheat, and a general decline in all lines has been experienced. For some time, it was urged that the Japanese resorted to discrimination and other unfair practices to secure control of the trade, but calm investigation has disproved this idea, and exonerated them from the charge of willfully violating the spirit of the Open Door doctrine. America lost the Manchurian cotton goods trade to Japan because the latter was in a more advantageous position to control the market, and for nearly every dollar of trade in American piece goods so displaced the Japanese purchased railway material and steel products from America which nearly balanced the loss.

And now to the complaint of the American cotton goods manufacturers are added those of the machinery, steel and railway material manufacturers, who find it almost impossible to gain a foothold in the Chinese market. The writer has received many letters from American firms desirous of entering the field, but who are deterred by the experiences of others who have spent considerable time and money in trying to develop a market without results. They assert that there is no hope of a square deal in the awarding of railway tenders in China, for invariably their bids are rejected on the grounds of inferiority, even when lowest in price and equal in quality to the successful bidder.

I have been requested many times to explain why such conditions exist but have refrained from so doing for fear that the explanation would be construed as an attack on British or German interests, and inspired by bitter national bias. Conditions have arisen however since the signing of the Hukwang Railway Loan Agreement, demanding that American manufacturers be acquainted with the reasons why their materials have been rejected and why it has been impossible for them to secure a fair share of China's market.

The Hukwang Agreement gives a fair field to the materials of America, Great Britain, France and Germany, and American manufacturers are looking forward with keen interest to the purchase of materials, hoping that at last there will be a semblance of a square deal which will warrant active participation on their part in China's development.

"Take warning by the cart ahead," to quote an old Chinese proverb, has been taken to heart by the American manufacturers, and with the following exposition of the real causes before him, he can determine whether it will profit him to turn out of the rut, and seek a new road towards the goal of commercial participation, or turnback and leave the race to those who are in the lead.

The "Open Door" doctrine had its inception in 1898 through the desire of Great Britain to counteract the forces making for the disintegration of the Chinese Empire, a situation menacing her trade supremacy and political advantages arising out of the occupation of Hongkong. America, at that time occupied with the questions leading up to the war with Spain, manifested little interest in the Far Eastern situation and although her statesmen readily indorsed the doctrine advanced by Great Britain, it was not until the termination of the war and the acquisition of the Philippines which made her an Oriental power, that America really awoke to the momentous trend of events on the mainland of Asia. In the short space of a year or so, while her attention was diverted by the Spanish war, the Open Door doctrine, originally advocated by Great Britain, had been superseded throughout Europe by that of the "Sphere of Influence" policy with partition as the probable fate in store for the ancient Empire. The various agreements entered into at that time between the powers had for their foundation the recognition of preponderating rights of the contracting parties within their respective spheres of influence. The partition of China was openly discussed and many maps delineating the areas or provinces apportioned to the various powers were published throughout the world.

The menace to the trade expansion of America involved in the acceptance of the sphere of influence doctrine, with the specter of dismemberment alwa s in the background, led the American Secretary of State to revive the Open Door policy, and advocate its acceptance by the chancelleries of Europe. The Communication directed by Secretary Hay to Count von Bulow, the German Minister for Foreign Affairs, on September 6th, 1899,

THE HIGH OFFICIALS OF CHINA

Rear Row Standing.—From Left to Right: Prince Pa; .....; Son of Prince Na; Duke Lin of the Imperial Guards; Prince Tsai-fu of the Imperial Guards; H. E. Yin Chang, Minister of War; H. E. Shou Hsun, Vice Minister of War; Admiral Tan, Vice Minister of the Navy; Prince Tsai Jui, President of the War College; .....; .....; *Front Row Seated.*—Prince Kala Chin; Prince Tsai Tao; .....; .....; Prince Yulang; Prince Na; Prince Su; Duke Tsai-tze, Minister of Finance; Prince Tsai Hsun; .....; H. E. Natung, 2nd V. P. of the Cabinet; H. E. Hsu Shih Chang, 1st V. P. of the Cabinet; H. E. The Kung-pao Sheng, Minister of Posts and Communications; H. E. Tsou Chia-lai, Acting Minister of Foreign Affairs; .....

was followed by the exchange of similar communications with the other Powers, and by March of 1900, the doctrine of the Open Door had been firmly established, giving equal facilities to the trade of all nations to participate in the development of China. While American industries ten years ago could hardly cope with the enormous development of the domestic market, far sighted statesmen could foresee the time when the limit of home development would be reached, and foreign markets would have to be cultivated. So it was from no altruistic motive that America stood forth at the critical stage in China's history, championed the Open Door, and induced the other powers to adhere to its principles. The adherence of the powers to the principles involved in the doctrine, although a distinct triumph to American diplomacy, at the same time solved the most critical situation in the history of China. The recognition of the doctrine by the great powers saved the Empire from partition, and guaranteed its integrity and neutrality. China was the real beneficiary, and her position among the nations of the world, for many years to come, will rest on the faithful adherence of the powers to the doctrine originally advanced by Great Britain and established by John Hay. If the law of Equal Opportunity be violated, China's end as a political entity would soon follow. The strictest compliance with its principles is imperative for the advance of the Empire under native rule, and the high Chinese authorities, if possessed of the slightest spark of patriotism, should bend every energy in enforcing its provisions. America, who made the Open Door possible, and so guaranteed the neutrality and integrity of the Empire, does not look for gratitude in return, but American manufacturers do ask for and have the right to expect that China will accord them fair play or a "fair field and no favor" in the awarding of tenders and contracts for materials.

If the American policy towards China is founded on trade and receives the support of the country because of that feature, then it is clear that if trade results are not forthcoming, and American products are repeatedly discriminated against by corrupt or indifferent Chinese officials, the manufacturers will retire disgusted from the field, and the policy of the Government fail for lack of support. American sentiment and sympathy has been largely instrumental in guiding China through her difficulties of the past few years, and public opinion has indorsed the Administration because of hopes that tangible commercial results would follow. The American manufacturer, however, has become somewhat sceptical of securing these results, as time after time he has experienced rejection of his tenders, which although lowest in price, on an even specification, have been refused on the ground of inferiority by some Chinese official acting under the advice of prejudiced counsellors. Time after time has he witnessed the flouting of the Open Door doctrine, and the cynical violation of the various railway loan agreements by the Chinese officials, so it is but natural that he has become hardened and indifferent to the promises of fair play. And with good cause and reason, for there is not a railway loan agreement entered into by China with other nations that has not been grossly disregarded and the provisions of fair play ignored.

In the absence of any specific railway laws, franchises, or charters for the various loan-built roads of China, the Loan Agreement becomes the fundamental law of the line, during the life of the loan. The provisions of these agreements are such that the principle of equal opportunity for all nations in supplying materials has been recognized, but have been deliberately disregarded in favor of special interests allied with the financial concerns furnishing the loan. The argument may be advanced that nations furnishing the funds should receive the preference in supplying materials, but, if so, then it should have been speci-

fically stated in the loan agreement, and no grounds for complaint or censure could then arise from other interests. I propose to prove conclusively by a résumé of the various agreements that the spirit of fair play, or the principles underlying the Open Door doctrine, incorporated in foreign railway loan agreements, has been contemptuously ignored and rejected by the country whose political independence hinges on its faithful application.

Peking-Newchwang Loan Agreement.—We will first take up and study the provisions of the Peking-Newchwang Loan Agreement, which for forty-five years is the law governing the operation of the Imperial Railways of North China.

A careful perusal of this document fails to reveal any provision for the purchase of materials, leaving it to be presumed that they will be furnished by the parties advancing the funds, or purchased in the open market. This oversight was, however, subsequently corrected in the Additional Agreement of April 29, 1902, when the line was turned over to the Chinese Government by the British military authorities after the Boxer troubles.

Clause 2 of this document reads:—

"ALL ROLLING STOCK, MATERIALS, ETC., OBTAINED FROM FOREIGN COUNTRIES FOR THE USE OF THE RAILWAYS SHALL AS FAR AS POSSIBLE BE PURCHASED BY MEANS OF PUBLIC TENDERS."

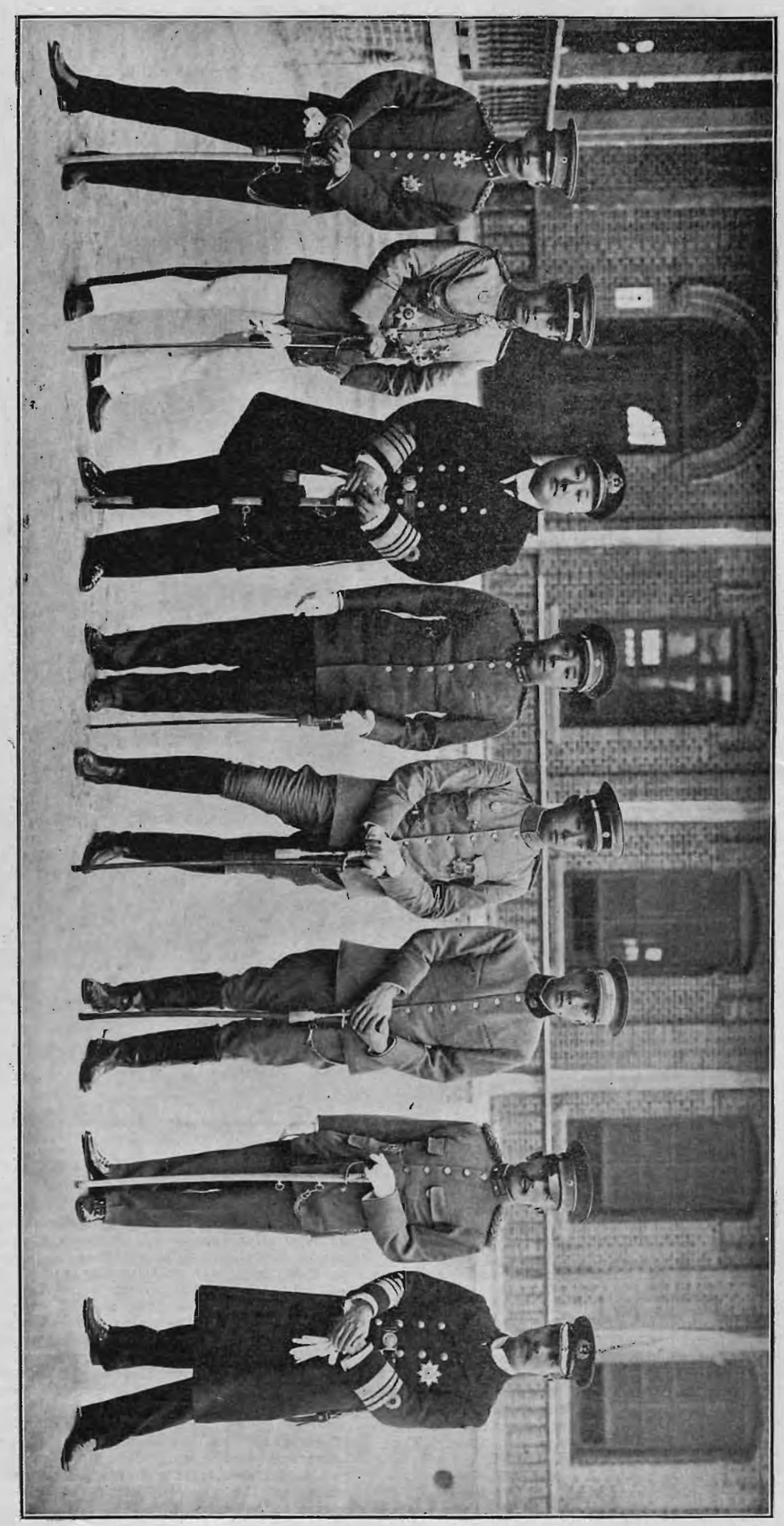
This is specific, and admits of no misinterpretation. It does not give preference to the materials of any one nation, but clearly implies that they shall be obtained from *foreign countries.*

If faithfully adhered to, tenders for materials would be publicly invited in Tientsin, or Shanghai, and the materials of all countries given an equal opportunity. But we find that this clause was ignored immediately after the signing of the agreement, and to prevent that free competition which would have allowed independent British, American or Continental manufacturers to tender, an arrangement was entered into whereby all materials were ordered through a firm in London acting as purchasing agents. This firm received for a long time a purchasing commission of 5%, and the British Chief Engineer of the railway drew up a list of makers approved by himself from whom materials could be purchased. The feature of this approved list, as far as car parts were concerned, was the absence of American makers. This purchasing arrangement, we understand, is still in force in a modified form.

For a more thorough understanding of the situation in the north, it is necessary to revert to the time when Mr. C. Kinder, the retired Chief Engineer, initiated the policy of building railway cars at the Tongshan Shops. In the absence of any definite standards his first step was to design those which could be most profitably and economically applied to the I. R. N. C., and to this end car plans for every variety of service were designed. As was quite natural, the British engineer at the outset adopted the British standards as regards diameter of wheels and other features at variance with American practice, which made it impossible for American car manufacturers to compete. And then by naming a selected list of British makers approved by himself, and placing all orders through the London purchasing agent, the door of equal opportunity opened by Clause 2 of the Additional Agreement was slammed to in the face of America.

Even this violation could be readily overlooked and the right conceded to China to give preference to British materials, as long as the purchases are for the maintenance of the lines controlled by the Loan Agreement. But it appears that a non-technical Chinese Railway Board in Peking, approved of and adopted the I. R. N. C. standards for use on all the roads in China, and the ruling is still in force.

From the manufacture of cars at the Tongshan Works for the use of the I. R. N. C. it was only a short step to the manufacture of cars for other railways in China, and the Chinese officials eagerly approved of this radical step. To the credit of Mr. Kinder I have been informed that he fully realized the violation of the spirit of fair play involved in this step and endeavored to dissuade the Chinese authorities from the scheme, but was over-ruled. And so under the provisions



H. E. YIN-CHANG, Minister of War. H. I. H. Prince TSAI FU, Imperial Guards. H. I. H. Prince TSAI-HSUN, Minister of the Navy. H. I. H. Prince TSAI JUI, President of the Nobles (War) College. H. I. H. Prince TSAI TAO, Commanding the Imperial Guards. H. H. Duke LIN, Imperial Guards. H. H. Prince PA, a Mongol Prince of the First Order. H. E. Admiral TAN, Vice Minister of the Navy.

THE HIGH OFFICIALS OF CHINA

Rear Row Standing.—From Left to Right: Prince Pa; ....., Son of Prince Na; Duke Lin of the Imperial Guards; Prince Tsai-fu of the Imperial Guards; H. E. Yin Chang, Minister of War; H. E. Shou Hsun, Vice Minister of War; Admiral Tan, Vice Minister of the Navy; Prince Tsai Jui, President of the War College; ....., ..., ...
Front Row Seated.—Prince Kala Chin; Prince Tsai Tao; ....., ..., ..., Prince Yulang; Prince Na; Prince Su; Duke Tsai-Tze, Minister of Finance; Prince Tsai Hsun; ....., ..., H. E. Natung, 2nd V. P. of the Cabinet; H. E. Hsu Shih-Chang, 1st V. P. of the Cabinet; H. E. The Kung-Pao Sheng, Minister of Posts and Communications; H. E. Tsou Chia-Lai, Acting Minister of Foreign Affairs; .....

was followed by the exchange of similar communications with the other Powers, and by March of 1900, the doctrine of the Open Door had been firmly established, giving equal facilities to the trade of all nations to participate in the development of China. While American industries ten years ago could hardly cope with the enormous development of the domestic market, far sighted statesmen could foresee the time when the limit of home development would be reached, and foreign markets would have to be cultivated. So it was from no altruistic motive that America stood forth at the critical stage in China's history, championed the Open Door, and induced the other powers to adhere to its principles. The adherence of the powers to the principles involved in the doctrine, although a distinct triumph to American diplomacy, at the same time solved the most critical situation in the history of China. The recognition of the doctrine by the great powers saved the Empire from partition, and guaranteed its integrity and neutrality. China was the real beneficiary, and her position among the nations of the world, for many years to come, will rest on the faithful adherence of the powers to the doctrine originally advanced by Great Britain and established by John Hay. If the law of Equal Opportunity be violated, China's end as a political entity would soon follow. The strictest compliance with its principles is imperative for the advance of the Empire under native rule, and the high Chinese authorities, if possessed of the slightest spark of patriotism, should bend every energy in enforcing its provisions. America, who made the Open Door possible, and so guaranteed the neutrality and integrity of the Empire, does not look for gratitude in return, but American manufacturers do ask for and have the right to expect that China will accord them fair play or a "fair field and no favor" in the awarding of tenders and contracts for materials.

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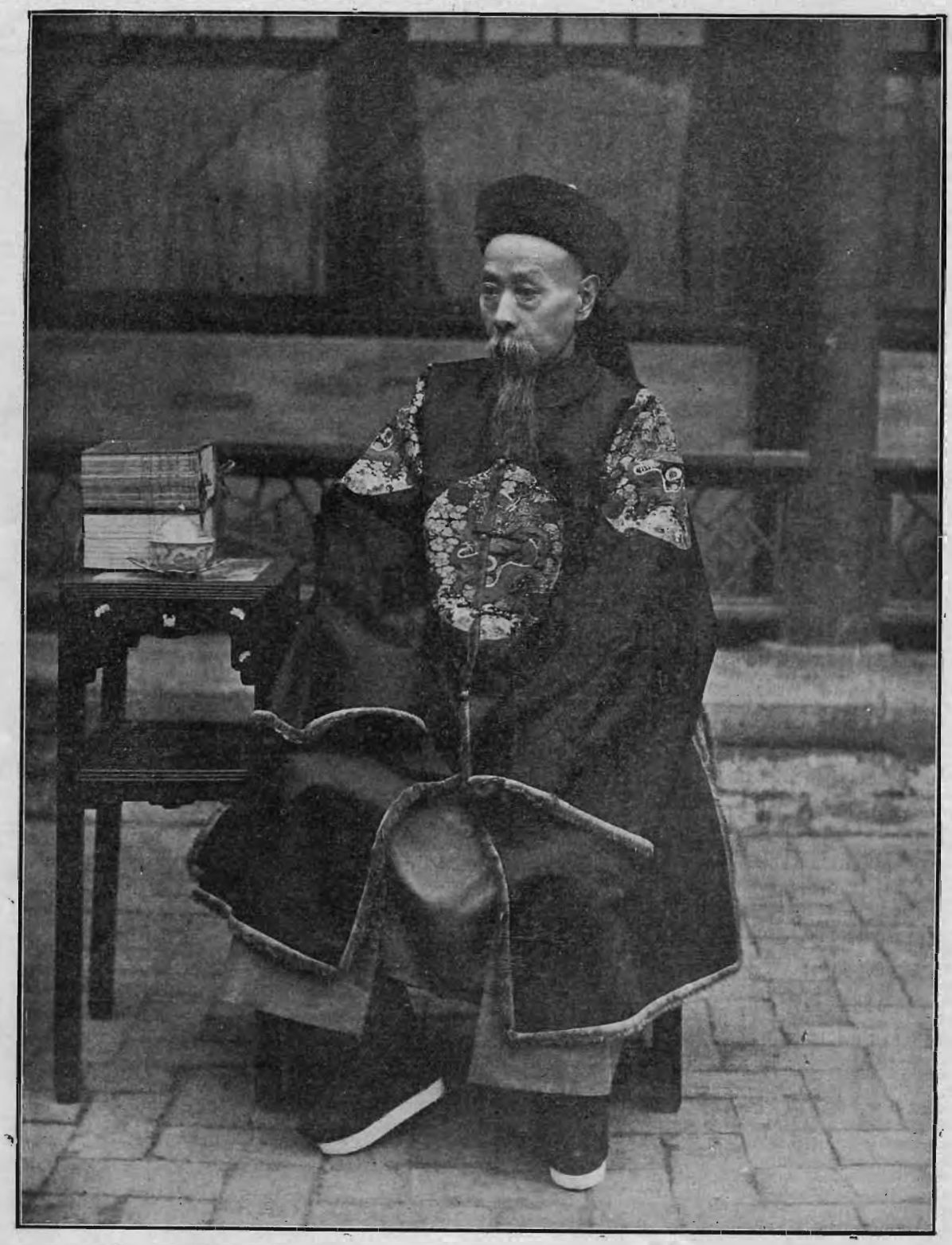


From His Latest Photograph

H. I. H. THE PRINCE OF CHING, PREMIER OF CHINA

of a Loan Agreement, which gives a British Corporation a lien on the line for 45 years, with a British Chief Engineer in charge, but with a specific clause for fair play, Chinese officials in their desire for profits entered into a program that, if permitted full scope for development, would end in the monopolization of the Chinese car market for a restricted list of approved British makers under cover of an official Chinese undertaking

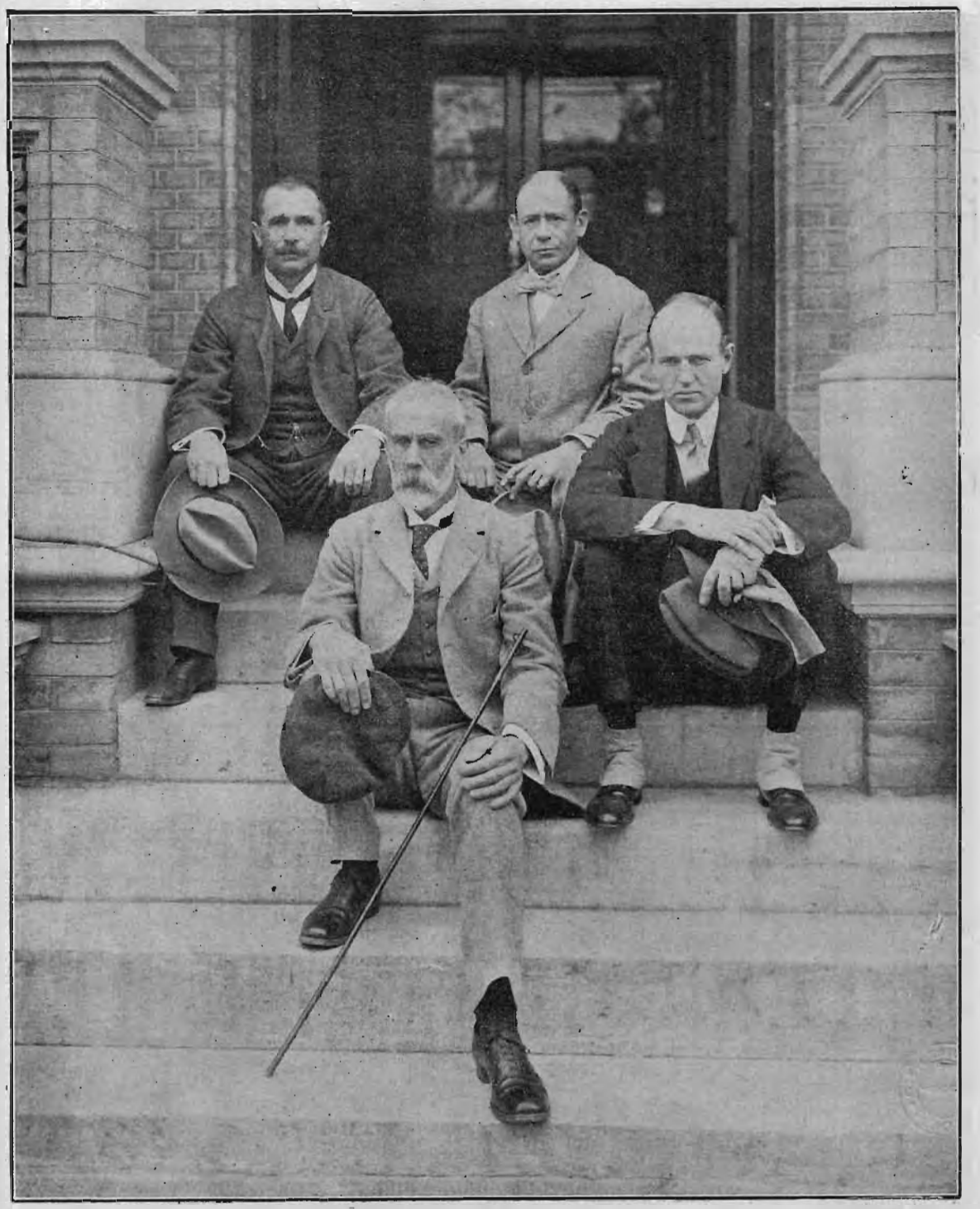
Under this arrangement a large number of cars for other lines in China have been built at the Tongshan Works, and this feature is receiving the careful attention of the Chinese officials at the present time. The point may be advanced that it is only a small matter as the Tongshan Works with its present plant cannot supply all the cars for other roads in China and therefore the menace to foreign manufacturers is more imaginary than real. But this is only begging the question. It is not the number of cars now made that counts, but the establishment of the principle in direct contravention to the basic features of the Open Door doctrine. The principle once admitted the way is open for the expansion of the shops to a point where car building for the Chinese Railways would soon become a monopoly and under the present system of purchases, this means a monopoly for a restricted list of approved British makers from whom all materials are ordered. If Tongshan standards are to prevail, the independent British maker together with American and Continental firms may fold up their tents, return home, and leave the field to the favored firms for thirty-four years to come.

If the principle underlying the operation of the Tongshan Works is permitted to stand without protest, their extension to meet the growing demands of the Empire will follow as a natural sequence, and instead of a few hundred cars built for other roads in China in the last few years, the number will be doubled in a very short time. It is safe to assume that the volume of car business undertaken for outside railways during the last few years reached $1,000,000 the materials for which were purchased without any regard for Clause 2 of the agreement. This amount of business, placed direct with the approved maker through the London purchasing agent, has been lost to firms in China. Aside from the evasion of the Open Door doctrine, the system is contrary to all recognized canons controlling

TWO OF THE CHINESE PRINCES, WHO LINE FOR THE THRONE, SET ASIDE FOR THE SON OF PRINCE CHUN

H. I. H. The Prince of Kung
Grandson of the Great Chinese Statesman of the same name.

H. I. H. Prince Pu-Hun
Minister of Agriculture, Industry and Commerce.



THE PEKING REPRESENTATIVES OF THE FOUR FINANCIAL GROUPS

H. CORDES (Deutsch-Asiatische Bank.) E. G. HILLIER (Hongkong & Shanghai Bank.) M. CASENAVE (Banque de l'Indo-Chine) W. D. STRAIGHT (American Group.)

German and British manufacturers could raise their prices without fear of competition. Nothing could be more to the point. While British and German interests are fully protected, the Clause opens the door of equal opportunity to all and reflects a spirit of fair play, which if honestly and faithfully applied by the Chinese authorities would result in a fair share of orders for materials being placed in America at terms advantageous to China.

On the German section, it appears that the Clause was interpreted to mean that German goods should have the preference regardless of price or quality, and all orders for materials went automatically through the purchasing agents to their friends in Germany. The implied spirit of the Open Door underlying the clause was ignored and foreign manufacturers other than German had no opportunity to tender or compete. Had equal opportunity been granted to all, the cost of materials undoubtedly would have been greatly lowered.

The natural impulse is to lay the blame for this violation of the Agreement to the door of the Germans, as they were the sole beneficiaries, but a close study of the loan agreement and the contract of the Engineer reveals that the real transgressor is the Chinese Director-General and his subordinates in charge of the two sections. The Managing Director had full control over purchases and no expenditure could be incurred without his authorization. The Chief Engineer was entirely under his orders, and had no responsibility except in the technical supervision of construction.

By no stretch of the imagination can the Chinese hide behind the Germans and lay the blame on the German Chief Engineer.

Clause 5 of the contract of the latter with the Chinese government stipulates that "he shall obey the orders of the Director General or other superiors, and pay proper respect to them as their several positions demand."

"The Director-General has the power to cause this Agreement to become null and void at any time."

And the contract furthermore stipulates that on the day of the resignation or dismissal of the Engineer-in-Chief his salary ceases and he shall be paid the number of days he actually worked, if he has not rendered a full month's service.

In other words the Chinese Director General or the Managing Directors have full and absolute control over the Engineer-in-Chief, even to the point of dismissal without notice. And yet with this power in their hand, they permitted all orders for the Northern Section to be placed in Germany without any regard to the provisions of the Loan Agreement conceding fair play to all. The Germans cannot be criticized for their share in influencing and abiding by a practice which benefited them exclusively, as before the world they are absolved by the terms of the agreement and engineers' contract which fixes the sole responsibility on the high Chinese officials.

TIENTSIN-PUKOW RAILWAY.

British Section.—The same Loan Agreement, quoted above, applies to the Southern or British section of this road, and the contract between the Chinese Government and the British Engineer-in-Chief is identical with the one signed by the German Engineer.

During the first year of construction the Chinese Managing Director of the Southern Section (Taotai K. S. Low) interpreted the Loan Agreement as giving a fair field to the materials of all nations, and many awards were made to Continental and American manufacturers against the advice of the British Chief Engineer. Taotai Low's attitude in the advertising and awarding of tenders was the nearest approach to a "square deal" recorded in the history of Chinese loan-built railways, but even with his acknowledged general record for fairness there were many instances where he was influenced by the Chief Engineer to ignore the provisions of the Loan Agreement and award the orders for materials to British firms when American tenders were lower on the same specification.

Tenders for eight locomotives duly advertised in advance were opened on the 29th of June, 1909, and although the American tenders were lowest the contract for six was awarded to a British manufacturer, and only two ordered from the lowest bidder. As this transaction is typical of the practice and spirit of awarding tenders on-loan built roads, regardless of the clause which gives equal opportunity to all, a copy of the official letter of the British Chief Engineer to his Chinese superior is herewith reproduced, with the names of the makers omitted.

Chief Engineer's Office,
Nanking, 29th June, 1909.

No. 1761.
The Managing Director
Tientsin-Pukow Railway, Southern Section.
DEAR SIR:—

Tenders for Indent No. 51.

These tenders were opened this morning, and the results are very favorable for the Railway, the prices quoted by first class firm being much lower than I expected.

The lowest tenders are from America and Continental makers, for their patterns and specifications. There is, however, very little difference between the lowest tenders and those of really first class makers.

I should not under any circumstances recommend the acceptance of tenders from Belgium or German makers. Mr. Sandberg writes me most strongly about the poor quality of materials used for rolling stock in both countries. In the present case, the difference in price between the Continental makers, and the best British and American Locomotives is so small, that there is no temptation to accept the inferior article.

Of the British makers, the lowest tender for first class maker, is that for whom..... .....have tendered. The price delivered at Pukow, according to the terms of our advertisement *being* £3-143 0s. 0d. Payment 15 days after delivery

Of American manufactured locomotives, two firms have submitted tenders which agree with our specification: Messrs.....tender for locomotives which are apparently according to our specification, though no detailed specification is given. Their price is £3,127 0s. 0d.

Messrs. .....tender for their price is £3,138 0s. 0d.

Between the prices quoted in these three tenders, there is only a total difference of £16 0s. 0d. and I have no hesitation in stating that the British Locomotives are much the cheapest at the price.

Most of the Locomotives of the Imperial Railways of North China, have been built by the British Company, and they have given every satisfaction The

Imperial Railways of North China have also had considerable experience with locomotives built by an American Company, and the experience has been greatly in favour of the British Locomotives.

The American locomotives spending a great deal of time in the shops under repairs, and costing much more for running expenses than the British ones. I have asked Mr. Alston to give me a report on this matter, which I shall annex.

As a rule there is a very considerable difference in price between British and American Locomotives, American Locomotives generally being much cheaper. Where the prices are approximately equal, as in this instance, there can I think be no question that the British are the best bargain, *and that even apart from the provision of the Loan Agreement, it would pay us best to accept them.*

Yours truly,
(Sgd.) T. W. T. TUCKEY.

The above communication reveals the following facts:—

First, that the American manufactured locomotives agreed with the railway specification and the price quoted was £16.0.0 lower than the British engine. Consequently all things being equal, the American manufacturer under the terms of the Loan Agreement, should have been awarded the contract. Particular attention is invited to the closing words of the above letter, *"Even apart from the provision of the Loan Agreement it would pay us best to accept them."* This corroborates what I have always contended and indicates that Chinese officials and foreign engineers recognize the true meaning of the clause which concedes to other countries the right to expect the acceptance of their tenders at equal quality and lower price, and which only gives the nation furnishing the loan preference when all things are equal. If materials from the country furnishing the loan were to be exclusively employed, the banks could readily sacrifice their commission in floating the loan and advance the funds to China at par, with the assurance that their industrial allies would split the excessive profits with them from the monopoly in selling the materials.

The above communication also reveals the methods employed in discrediting American goods, in favor of other national interests. It demonstrates the fact that the British Chief Engineer was cognizant of the infraction of the Loan Agreement, and the American makers lost the order on the Engineer's report that their locomotives were inferior.

Further evidence in support of my argument is herewith presented by the following extracts from an official communication of the same Engineer-in-Chief to his Managing Director concerning the tenders for 250 freight cars, dated July 1st, 1909.

No. 1772.

Chief Engineer's Office,
Nanking, 1st July, 1909.

The Managing Director,
Tientsin-Pukow Railway, Southern Section,
Nanking.

DEAR SIR:—

Indent No. 50.

I have gone carefully through the tenders for rolling stock under the above Indent. Owing to the great number of tenderers, and the variety of offers, the difficulty of classification has been considerable. I am now able to enclose lists giving the offers in each case, in order of price, commencing with the lowest.****

My own experience of Belgian made rolling stock is limited to the cars of the Peking Hankow Railway, which are certainly very rough, and which gave much trouble, when running over the Northern Railway lines. Mr. Sandberg, who has a world wide experience, has, however repeatedly warned me against Belgian and German rolling stock. In Mr. Sandberg's letter dated the 20th April last, he wrote as follows:

"I am receiving no end of applications from all over Europe and America, so the competition will be too great, and you will no doubt receive tenders with very low prices and very poor quality. I quite see that you must be forced by your Directors to act in this way. They will all suffer and we too, if the tenders are not judiciously selected. *Take for instance the rolling stock in Belgium and Germany, the former particularly, and even in America,* it is as poor as possible, and while all the buying there is going on by advertisement like yours, and their own careful inspection, which clearly shows that it cannot be done, *and Mr. Kinder's system for the I. R. N. C.* of inviting only the *best makers approved by himself* was no doubt the best way."

You will note that Mr. Sandberg's opinion as to the quality of Belgium rolling stock is very strong indeed, and after such an opinion, I cannot possibly recommend it.*****

The prices are very favourable indeed, and far lower than I anticipated, for first quality cars.

Yours truly,
(Sgd.) T. W. T. TUCKEY.

The above letter is highly interesting and not only corroborates my statements in regard to the unfair awarding of tenders on the Tientsin-Pukow line, but also the conditions underlying the purchasing arrangement for the Imperial Railways of North China. Particular attention is invited to the advice of Mr. Sandberg, the London Consulting Engineer, about purchasing Belgium and German rolling stock and even American material, and his remarks concerning Mr. Kinder's system of inviting only the best makers *approved by himself* is elucidating and convincing.

No comment is necessary in the face of such conclusive evidence.

In April of last year, after the removal of Taotai Low from the post of Managing Director of the Southern Section of the Tientsin-Pukow Railway, tenders were invited for the supply of 12 locomotives. Under Taotai Low's administration there was no difficulty for a reputable firm to secure the necessary specifications and tenders, but under his successor all kinds of difficulties have beset the path of those who desire to compete.

As an instance we can cite the experience of one Anglo-American firm, representing a well known American locomotive manufacturer. They applied for the specifications immediately after the appearance of the advertisement, and sent in the necessary fee ($25.00). In return they were furnished a blue print of an engine. They sent again for the specification to the authorized representative of the railway in Shanghai, and the reply came back that they had not yet arrived from Nanking. They sent again in due course and were then informed that there was no specification, the blue print being the only thing issued. Realizing that they were being discriminated against, the manager of the firm went in person and de-

H. I. H. Prince SU, Minister of the Interior. One of the Eight Princely Families.

H. E. Na Tung, 2nd Vice President of the Cabinet.

manded the proper specification, as a result of which a solitary copy was unearthed and he was permitted to copy it. The tenders were duly submitted and opened and the representative of the American manufacturer was far the lowest in price.

The American manufacturer bid strictly to specification, the engines to be built under the supervision of the Inspecting Engineer in America, yet although they were nearly £300 lower in price on each engine, the contract was awarded to the British makers. In the face of this great variance in prices in favor of the American locomotives the Managing Director refused to take the responsibility in awarding the tender and referred it to his superiors in Peking, who decided in favor of the British maker. The explanation given at the time was to the effect that the American manufacturer did not have a technical representative on the ground to explain the tender. The fact was overlooked that an engineer of the American Company was at Peking at that very time superintending the erection of locomotives supplied by his firm to the Peking Kalgan line, and who could have readily answered all necessary questions. *The lame explanation offered by the Chinese to justify their violation of the spirit of fair play, did not extend to the British makers, who were in the same boat as the American makers, as they did not have a technical representative in China.*

This discrimination cost the Chinese Government just $18,000.00 gold, but the damage to its prestige cannot be reckoned in dollars and cents. And for the last year there has been hardly a tender awarded on this line not open to criticism and the charge of unfairness, and many reputable firms now refuse to tender on materials for this line, knowing full well that they cannot expect equitable treatment.

The Shanghai Nanking Railway.—The Loan Agreement controlling the construction and operation of this line is typical of the spirit of fair play and adherence to the principles of the Open Door doctrine, by the British Government in conceding its support to the financial corporation advancing the funds, and at the same time the evasion of this agreement stands forth as a shining example of the spirit characterizing those who interpreted it according to their own interests, and in which they received the tacit approval of the high Chinese authorities.

Article 9 of the Shanghai-Nanking Loan Agreement, signed at Shanghai the 9th of July 1903, reads:-

"9.—As remuneration for superintendence and services the Corporation shall receive 5 per cent. on the entire cost of all materials purchased for the railway.

"It is agreed that all materials required for the railway shall be purchased in the open market at the lowest price obtainable, but it is understood that all such materials shall be of good and satisfactory quality. Invoice and inspector's certificates are to be submitted to the Chinese Administration.

"With a view to encouraging Chinese industries Chinese materials are to be preferred, as also the products of the Hanyang Iron Works, provided price and quality are suitable.

"No commission will be allowed to the Corporation on the purchase of materials except as herein provided. All trade discounts or rebates, if any, are to go to the construction account."

This is all. It is specific, and admits of no misunderstanding. It is a clean cut provision for fair play and the open door for materials of all nations, for no where in the other clauses of the agreement is preference to British materials specified.

It will be readily conceded by American and Continental manufacturers in a friendly spirit that although British materials were not given preference in the agreement, the fact that a British Corporation furnished the funds and controlled the drawing of plans and specifications and superintended the purchases, entitled the products of Great Britain to greater consideration. This, however, does not alter the ethics of the case. The Loan Agreement is the fundamental law of the line during the life of the loan, and should be adhered to. If it were intended that British material should be exclusively employed, it should have been so stated in the bond, and o her interests would have nothing to complain of.

We find however that, notwithstanding the specific agreement that all materials should be purchased in the open market at the lowest price obtainable, the purchases were made exclusively in London, without reference to the lowest price or open tender.

The result of this method was to make the road more costly.

It is of course difficult to point to any concrete instances in proof of this, but the following evidence from the highest British authority in China, is sufficient to emphasize the point. At a meeting of the Hongkong Legislative Council, held May 14th 1909, Sir Frederick Lugard, Governor of Hongkong, in defending the high costs of the Kowloon-Canton Railway showed where the original estimates were too low and the reasons why the costs had ascended to the enormous figure of nearly $250,000 gold per mile. He also showed where over-estimates had been made and said:—

"I have dealt in considerable detail now with the items that involve excesses in the estimates. There remain those under which large savings are shown. Ballast and permanent way show an estimated saving of $51,700, *rolling stock $82,400.*"

"I may add, too, that the *carriages will cost something less than half what had been estimated, for the amount placed on the estimates had been calculated on the basis of carriages for the Shanghai Railway, and we find by adopting a less expensive model we can reduce the cost from about $2,000 per carriage to $1,000*".

This direct statement from the Governor of Hongkong is convincing. The same Consulting Engineers who directed the construction of the Shanghai-Nanking Railway which cost China $75,000 (Gold) per mile, were also retained to superintend the 22 mile British section of the Kowloon-Canton Railway which cost the Colony the enormous outlay of nearly $250,000 gold per mile and a member of the same firm has again been appointed by the Chinese Government as Chief Engineer of the British section of the Hukwang Lines.

This appointment is a complete vindication of Mr. Collinson's record in the construction of the Shanghai-Nanking Railway and must be accepted by the world as an apology on the part of the high Chinese authorities for all the abuse and criticisms heaped on him the last few years. By reinstating him in the important position of Engineer-in-Chief of the British Section of the Hukwang Railway, China admits to the world that the charges against Mr. Collinson were groundless; accepts all responsibility for the extravagance, and endorses the methods employed in awarding contracts for materials in violation of the Agreement. If the Chinese Officials acting with Mr. Collinson are to interpret the Hukwang loan in the same spirit as the Shanghai-Nanking Agreement, then American and other manufacturers may well "take warning from the cart ahead" and forego hope of equal participation in the supply of materials as provided for in the Loan and Paris Agreements.

Had open tenders been invited, and the cars and other material for the Shanghai-Nanking Railway purchased in the open market at the lowest price obtainable, on a fair specification, the saving to the Chinese Government would have been considerable. If $82,000 Mex. (say $40,000 gold) were saved in the rolling stock for a little 22 mile line, it is fair to assume that a proportionate saving would have been made on a 200 mile line.

Had all the materials for the Shanghai-Nanking Railway been purchased on the open market as provided for by the Loan Agreement, and the tenders advertised in Shanghai, and American and Continental firms permitted to compete, China would have had just as good a line at much less cost. Instead of operating at a loss, owing to the high capitalization, the line would now be paying its fixed charges or more. The failure of China to insist on her rights and demand compliance with the express terms of the agreement has cost her dear. She is still paying for it.

The Hukwang Railways.—And now we may consider the clauses of the Hukwang Railway Loan Agreement, the official text of which is printed in full in the supplement to this isssue of THE FAR EASTERN REVIEW. The history of the negotiations leading up to and surrounding the final acceptance of this loan, and the many bitter international jealousies engendered in consequence is still fresh in the minds of our readers and further agitation of the subject is to be deprecated. However, we desire to emphasize one point for the benefit of American manufacturers and their agents in China. The negotiations between the four financial groups had dragged along for several months owing to the refusal of the British and German groups to permit any change in the wording of Clause 18 of the original agree-

H. I. H. Prince YU LANG, Chief of the General Staff.

the placing of Goverament orders. The first duty of a government is to patronize the firms in its own country whose taxes are contributed to its maintenance. Every other country recognizes this principle and government orders are placed through firms whose duties and other taxes help to swell the national treasury receipts. Notwithstanding that all leading European and American manufacturers are represented in China by firms contributing to the support of the Chinese Government, they are ignored and passed over, in favor of a purchasing agent in London who has no direct interest in the country. When it is considered that as a general rule all agency agreements between manufacturer and representative give the latter a commission on all purchases for his territory whether placed through him or otherwise, the practice of going over their heads in the hope of receiving better prices is unsound. The purchasing agent in London or elsewhere cannot hope to secure a better price than the manufacturer's direct representative on the ground, so the result is that the Chinese Government in many cases really pays two commissions, one to the purchasing agent, and one to the China representative of the manufacturer. Patronizing the firms who contribute their taxes, duties, likin, and other extortionate demands of Chinese officials, is only legitimate reciprocity, and aside from the spirit of fair play and equity involved, it would save an extra commission to the Chinese treasury.

The operation of the Tongshan Works as a part of the Imperial Railways of North China, under the provisions of the British Loan Agreement, has created a very subtle commercial situation. The works are run as a Chinese official enterprise, and under cover of this, the agents of the restricted list of approved makers, who furnish the materials for construction of cars and locomotives, are enabled to push the sale of their specialties with Chinese private railways. Car building in China is a misnomer and is really only the assembling of parts ordered from abroad. Under any condition the car body would be constructed in China. It is true that at Tongshan the underf ames and trucks are also made at the works, but wheels and axles, air-brakes, couplers, and other accessories are ordered from abroad.

TAOTAI WAN BING CHUN (B. C. Ward)
Secretary to H. E. Tuan Fang, Educated in America

H. E. TUAN FANG
Director-General of the Imperial Hukuang Railways.

When the agent of the approved maker solicits business direct from the Chinese private railway director and is unable to secure the order, as a last resort, he recommends the purchase of cars from the Tongshan Works, knowing that he will secure the same profit in a round about way.

I have before me the report and estimate submitted to the Director-General of a private Chinese railway company by a leading British Consulting Engineer. In his summary of costs, he refers the Chinese Director to the Shanhaikwan Works of the I. R. N. C. for bridges, and to the Tongshan Shops for cars and locomotives, where he urges they can be purchased cheaper than they can be imported, and at the same time built under Mr. Kinder's standards and specifications in conformity with the ruling of the Railway Board. As only the materials of approved British makers enter into the manufacture of bridges, cars and engines at the above works, the Engineer could safely recommend a prospective Chinese customer to Tongshan knowing that his friends would secure the profits from the order. And under cover of patronizing a Chinese Government undertaking, he made a strong bid for the business.

And we find that owing to the keen competition for freight and passenger cars on the southern section of the Tientsin-Pukow Railway, resulting in the placing of many orders to Continental and independent British makers, at prices lower than the favored makers could furnish them, some 100 cars were ordered from the Tongshan Works. In addition nearly all the Kalgan rolling stock—over two hundred cars—were built at the Tongshan Works. This is a purely Chinese railway, though it may come under the terms of Peking-Newchwang Loan Agreement as a branch or extension of the I. R. N. C. if the point is raised.

American and Continental car manufacturers were excluded from any participation in the supply of cars for this line, owing to the state of affairs which threw all the orders for materials through a London purchasing agent, in direct contravention of Clause 2 of the Additional Agreement. Here the Chinese officials exercised full control over the placing of orders and many American locomotives and other materials were purchased.

The situation herein revealed points to one inevitable conclusion. If Chinese officials continue to manufacture cars at Tongshan, for all the railways in the Empire, and confine their purchases to an approved list through a purchasing agent in London, American car manufacturers can retire from the field.

If China desires to expand the Tongshan Works and enter into the manufacture of cars for roads outside the Pekin-Newchwang Loan Agreement, then it is only fair that the Works be separated from the administration of the I. R. N. C. and operated as an independent national enterprise, and the door of equal opportunity opened to the manufacturers of all nations, as provided for in Clause 2 of the Additional Agreement. Otherwise the railway car market in China will be slowly closed to all but the restricted list of British makers.

THE TIENTSIN-PUKOW RAILWAY.

German Section.—Clause 18, of the Tientsin-Pukow Railway Loan Agreement, reads:—

"For all important purchases of railway materials tenders shall be called for by the Managing Director; and the Banks and Syndicate as Agents shall purchase the materials required on the terms most advantageous to the Railway, and shall charge the original cost of same with a commission of five per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director.

"The Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the northern and southern sections respectively. The Railway Administration reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China or abroad should it see fit to do so.

"No commission shall be paid to the Agents except as above provided; but it is understood that the Railway Administration shall provide out of Railway funds for the remuneration of Consulting Engineers whenever their services are engaged.

"With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, German or other foreign goods to Chinese materials, and goods manufactured in China. No commission will be paid on purchases of such materials and goods.

"AT EQUAL RATES AND QUALITIES GOODS OF GERMAN AND BRITISH MANUFACTURE SHALL BE GIVEN PREFERENCE OVER OTHER GOODS OF FOREIGN ORIGIN FOR THE NORTHERN AND SOUTHERN SECTIONS RESPECTIVELY."

This Clause implies that for all important purchases tenders shall be invited open to the manufacturers of all countries, and if American or other goods are equal in quality, i. e., according to specification, and lower in price, provision is made for their acceptance. Otherwise,

H. H. The Prince of SHUN CHENG, High Commissioner for Opium Suppression.

ment, which named the British and Chinese Corporation and the Deutsch-Asiatische Bank as purchasing agents for the lines.

The representative of the American Group, having full knowledge of the bitter national prejudice actuating European engineers in influencing the awarding of tenders, and with the record of the British & Chinese Corporation and the Deutsch-Asiatische Bank in placing orders for materials regardless of the provisions of the Loan Agreements, endeavored to secure American participation in the appointment of a purchasing agent to provide a square deal for American manufacturers. This point was stubbornly contested for months, the British and German Groups refusing to admit American participation or relinquish their advantage. To terminate a trying situation, the American representative finally waived the right to appoint an American purchasing agent, on the condition that the British and German purchasing agents write an official letter obligating themselves to an impartial awarding of tenders. In other words the American representative placed the British & Chinese Corporation and the Deutsch-Asiatische Bank on their honor to discharge their duties impartially.

For a fuller understanding of this question, Article XVIII of the Hukwang Loan Agreement follows:—

For the Hupei Hunan section of the Canton-Hankow railway line, and the Hupei section of the Szechuan-Hankow railway line respectively (a) The British & Chinese Corporation, Limited and (b) the Deutsch-Asiatische Bank will act as Agents of the Railway Administration during construction for the purchase of all materials, plant and goods required to be imported from abroad. From this category rails and their accessories are excepted; for the purchase of which the Ministry of Posts and Communications has memorialized the Throne recommending that they should be manufactured and supplied by the Hanyang Iron Works. Their price will be settled by the Ministry of Posts and Communications with the Hanyang Iron Works, after comparison with the current quotations for rails purchased by other lines from Europe or America. No delay will be allowed, and it is understood that if the Hanyang Iron Works are unable to supply the requirements of the lines in question in such manner as to insure uninterrupted construction, the Purchasing Agents will be instructed to procure from abroad the additional supplies required. For all important purchases of materials tenders shall be called for by the Director General or the Managing Director concerned; in the case of all tenders, indents and orders for the importation of goods and materials from abroad, the said Agents shall purchase the materials required on the terms most advantageous to the railways, and shall charge the original net cost of the same, plus a commission of five per cent (5%). It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director concerned.

In return for payment of commission as above stated the British & Chinese Corporation, Limited, and the Deutsch-Asiatische Bank as Agents for the respective railway lines, shall be prepared to superintend the purchase of all foreign materials required for their construction and equipment, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality and that the aforesaid Agents will avail themselves of the services of engineering experts to be selected by the Ministry of Posts and Communications for the inspection of such materials. The fees of these Inspectors shall be borne in equal shares by the Ministry of Posts and Communications and the Purchasing Agents. At equal rates and qualities goods of British, French, German and American manufacture shall be given impartial preference over other goods of foreign origin. The Railway Administration of the Ministry of Posts and Communications reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China, or abroad, should it see fit to do so.

The most favorable shipping and insurance rates are to be secured and statements thereof together with original invoices and Inspectors' certificates are to be submitted to the Director General and the Managing Director concerned: all return commissions and rebates of every description shall be credited to the railways and all purchases made by the Agents on behalf of the railways shall be supported by manufacturers' original invoices and Inspectors' certificates. No commission shall be paid to the Agents except as above provided; but it is understood that the Railway administration shall provide out of railway funds for the remuneration of Consulting Engineers whenever their services are engaged.

With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, French, German, American or other foreign goods to Chinese materials and goods manufactured in China, such cases being left to the decision, in consultation with the Engineers-in-Chief, of an Inspector appointed by the Ministry of Posts and Communications. No commission will be paid on purchases of such Chinese materials and goods.

It is understood and agreed that, after the construction of the lines is completed, the British & Chinese Corporation, Limited, and the Deutsch-Asiatische Bank will be given the preference for Agency business for the respective lines during the currency of the Loan, for the supply of foreign materials which the Railway Administration may require, on terms to be hereafter mutually agreed upon.

It will be seen that this concedes to the British and Chinese Corporation and the Deutsch-Asiatische Bank the exclusive purchasing rights for the entire system including the American section, on which they are allowed a purchasing commission of five per cent.

At the meeting held in Paris on May 23, 1910, between the representatives of the four groups, it was agreed:

"That the existing arrangements of Article 18 of the original Loan Agreement be allowed to stand provided that the two Purchasing Agents give to the French and American Groups a letter in the following terms, and provided moreover that said purchasing agents shall be bound to report as far as possible to any group requesting such information regarding the purchase of materials under the construction of the Director General in accordance with the provisions of the original Loan Agreement with accompanying despatch and the supplemental Loan Agreement."

"We beg to inform you that we have been appointed purchasing agents for the Hankow-Canton, Hankow-Szechuen railways in accordance with article 18 of the Hukwang Loan Agreement initiated on June 6th, 1909."

"In view of the terms of the said Loan Agreement with accompanying dispatch and the agreement supplementary thereto providing for the admission to participation of the American Group and securing equal consideration for British, German, French and American materials and equal facilities for the receipt of tenders in the markets of the four countries, we beg to state that we will take all steps necessary to assure the above mentioned consideration for French, American materials *and make all proper provision for the receipt of or an absolute basis of equality of tenders from British, German, French and American manufacturers*".

Signed:

F. URBIG.
G. JAMIESON.
M. CASENAVE.
W. D. STRAIGHT.

At the same meeting it was furthermore agreed that all four groups should participate equally in the purchasing commission, the Deutsch-Asiatische Bank and the British & Chinese Corporation receiving one per cent as compensation for the actual services rendered, and the other four per cent to be equally divided between the four groups.

So apart from the provision of the Loan Agreement, there is a gentleman's compact that fair play will be observed.

The wording of the Loan Agreement, however, is somewhat ambiguous, and fails to define the precise methods to be followed. According to the agreement the British and Chinese Corporation and the Deutsch-Asiatische Bank are to act as agents for the purchase of *all* materials, plant and goods required to be

H. I. H. Prince TSAI FU. General of the Imperial Guards.

H. I. H. Prince TSAI-CHEN, Ambassador of China to the Coronation of H. M. King George. It is reported he will be appointed to a high post in the near future.

THE SONS OF PRINCE CHING

H. H. THE PRINCE OF CHUANG, One of the Eight Princely Families

imported from abroad, rails excepted, but for all important purchases of materials tenders shall be called for by the Director-General or the Managing Director concerned, and the said agents shall purchase the materials required on the terms most advantageous to the railways, charging the original net cost plus a commission of five per cent. However it is understood that no orders shall be executed or any expenditure incurred without due authorization by the Managing Director concerned.

What does this mean? If the Managing Director is to call for tenders on all important purchases, the tenderers will submit their prices, c. i. f. at Hankow, and the award will be made on the basis of this price, without reference to the purchasing agent. If this is the meaning of the Clause, then the duties of the purchasing agent are superfluous and the designation is wrong, for they cannot intervene to secure more advantageous terms after the tenders have once been opened and awarded. If the payments are to be made through the British and Chinese Corporation and the Deutsch-Asiatische Bank, then their duties are those of a fiscal or disbursing agent, and the 5% purchasing commission is only another name for a bonus for handling the funds.

Although one paragraph expressly states that all tenders shall be called for by the Managing Director, and no orders shall be executed or expenditure incurred without his sanction, yet we find that the purchasing agents in return for the commission are to superintend the purchase of all foreign materials, which shall be purchased in the open market at the lowest rate obtainable, and that at *equal rates and qualities* goods of British, French, German and American manufacture shall be given impartial preference over other goods of foreign origin, and the purchasing agents are to secure the most favorable shipping and insurance rate and all return commission, rebates, &c., shall be credited to the railways.

The phraseology of the clause is very much involved, and the only clear explanation seems to be that only for *important* purchases are tenders to be called for by the Managing Director, and all other orders are to go through the purchasing agents after due authorization from the Director.

The question naturally arises, what constitutes an important purchase, so that public tenders shall be invited? Is this confined to cars, locomotives, and bridges only, and are all other material classed as unimportant?

The most important order can be mutilated and divided into small parcels and placed direct through the purchasing agents. The value of accessory supplies for the construction of 1200 miles of railway is enormous, and if ordered in sufficient quantities would constitute an important order worthy of calling for tenders. If, however, these materials are to be ordered in small quantities at the whim of the Engineer, it is plain that the Director General will not have to call for tenders, and the goods will be purchased through the agents.

In this case what is the duty of the Purchasing Agent? The Loan Agreement provides that they shall purchase the goods in the open market at the lowest rate obtainable, and equal preference given to British, German, French and American makers, and in the Agreement signed in Paris, the British and German purchasing agents obligate themselves to give equal facilities for the receipt of tenders in the markets of the four countries.

This implies that in order to faithfully carry out their duties the British and German agents must also publicly advertise tenders for the various orders sent to them for execution.

If these orders are to be placed privately or by private tender, how are the various manufacturers to know whether they are receiving equitable treatment? If the British or German purchasing agents place these orders with their friends direct, of what value is the Paris agreement which calls on them to explain after the deal is closed?

There is only one honorable method to follow, and that lies in the timely advertising of all tenders so that all parties to the agreement will receive a fair and even chance, otherwise the agreement is not worth the paper it is written on.

In this connection the question may be asked, what is a purchasing agen ? The commonly accepted definition is—one who purchases materials on a commission basis, and who is in honor obligated to give the best of his time, experience, knowledge of prices, etc., to the party engaging his services. He cannot in honor while acting as such at the same time act as a selling agent for any manufacturer and sell to his client, thus receiving a commission both ways. In America or Great Britain the duty of a purchasing agent is clearly defined and governed by a rigorous code of ethics, any deviation from which destroys confidence in his methods and ends his usefulnes. A purchasing agent who has an intimate knowledge of prices, freights, exchange and other conditions, can purchase materials lower than his client and justify his five per cent commission. In America a 2½ per cent commission is considered adequate for such services. The purchasing agent has no entangling alliances with manufacturers, but serves his client by securing the lowest prices on an even specification by open competition.

The question of the duties of a purchasing agent in connection with Chinese railways has never been clearly defined, and each agent has apparently placed his own construction on its meaning. In the early days

of the America-China Development Co., who held the original concession for the construction of the Canton-Hankow Railway, the firm of Wonham, Sanger & Bates of New York (then Wonham & Magor) was appointed purchasing agents for the line. The business code of morals under which they operated, compelled them to cancel all agency contracts with manufacturers they had represented for years, and to enter their new duties with a clean slate, and with no entangling commercial alliances to provoke suspicion and criticism. This is the correct and only attitude.

In nearly all the railway loan agreements entered into between the British and Chinese Corporation and Chinese Government, the Corporation has received the customary five per cent for superintending purchases, or in other words for acting as purchasing agents.

Invariably however the Corporation has delegated its powers as purchasing agent to a leading British mercantile firm who have superintended the purchasing of materials in China and elsewhere. This action has created a very delicate situation, for this firm actively represents many of the leading manufacturers of railway material.

Under the terms of previous Loan Agreements, the question had no special interest to American manufacturers, but under the terms of the Hukwang Loan Agreement, which admits American material on an equal footing with the other nations, and the fact that the purchasing agent is obligated to give a square deal to all, the duties of a purchasing agent should be clearly defined, especially as we are informed that the British and Chinese Corporation has again delegated its powers to the same firm. If this is the case, then we contend that the latter firm is debarred from acting as agents for the sale of materials to the lines embraced in the Hukwang Loan, and must confine its duties solely to the impartial awarding of orders to other firms. The Deustch-Asiatische Bank also acting as purchasing agent has apparently no organization in China for the discharge of these duties, and all orders would be automatically placed with their friends in Germany. The situation demands some radical departure from the prevailing practice to avoid criticisms and misunderstandings.

Nearly all American and European manufacturers of railway supplies are represented in China by reputable firms, and we believe that the only solution to insure fair play to all interests is for the British and Chinese Corporation and the Deutsch-Asiatische Bank to employ a competent party with assistants to act for them, establish headquarters in Shanghai, and publicly invite tenders for the various orders for materials as they are required. Such a step would meet with the hearty approval and indorsement of all fair-minded merchants, and pave the way towards a better understanding and the establishment of mutual confidence.

With the duties of the foreign purchasing agents clearly defined, and the way paved for an impartial rendering of their services, there yet remains a difficult situation to improve before a square deal can be secured. Of what avail is the impartiality of the purchasing agent, or the Chinese Managing Director, if each Engineer is to draw up his own specifications for materials, according to his ideas of what is best and proper? The natural tendency of the engineer of a loan-built railway is to devise a specification on which only his particular friends can hope to tender with success. If American standards for bridges, and rails, are specified by the American Engineer-in-Chief, British or Continental materials cannot hope to compete, or if British sections for bridges and rails are specified, American and Continental makers are disbarred. If the engineer specifies a locomotive following purely British practice, the other makers are frozen out, and so with cars and other materials. It is so easy to devise specification and insert some innocent looking clause, which closes the door to all but

H. I. H. Prince Tsai Hsun, Minister of the Navy.
Brother of the Regent, and Uncle of the Emperor.

some favored maker. The failure of the Chinese Railway Administration to adopt a set of standards for the roads under its control is almost criminal and opens the way to all manner of graft, corruption or favoritism, which in the end means a needless drain on the treasury.

The engineer of each loan-built railway has in the past been a law unto himself, and set his own standards and drew up his own specifications, and then when competition was permitted at all, it was restricted to a list of makers approved by himself.

The Chinese Government has placidly refrained from interfering in such practices, and the consequence is, that to-day after an expenditure of over $120,000,000 Gold, there is no co-relation between the systems, interchange of cars or through traffic is almost impossible, and sooner or later the enormous outlay for her ill assorted collection of rolling stock will be wasted, and the lines equipped anew.

The time has arrived when China must face the situation and assert her authority. The Minister of Posts and Communications by further delay in authorizing a set of national standards, is piling up future trouble for his country, and holding open the door for further corruption and discrimination.

It is the only solution to a fair deal that will relieve China from the charge of evading the Open Door doctrine. If a committee of broad-minded foreign engineers, one Continental, one British and one American, together with a Chinese of the standing of Jeme Tien Yu, were appointed to devise a set of standards for Chinese railways, it would solve the question. Then when future railways are to be constructed, all manufacturers will know exactly what will be required.

At present half the time of the Engineer-in-Chief is devoted to drawing up plans and estimates for materials, instead of superintending the real construction work. With official standards already created, it would relieve him of much mental worry, and make impossible any improper practices or discrimination.

With a fair clean specification for locomotives, cars, bridges and other material, giving the manufacturers of all nations an equal opportunity to tender, real competition will result to the immense advantage of the Chinese Government.

If the present system is permitted to continue, then we may look forward to a repetition on the Hukwang Lines of the practices characterizing the building of other roads, and China will again "pay the piper". With a set of standards making for a clean cut specification once established, there remains yet another important feature for the insurance of fair play to all. This consists in timely advertising the tenders in the daily or other papers at Shanghai, so that every firm will be on the same footing.

There is plenty of time to spare in the construction of the Hukwang Lines, so that tenders for the purchase of all important materials can be duly advertised in advance allowing sufficient time to elapse before their opening. This enables the firms on the ground to mail the specifications home and receive their replies by mail. This feature is imperative for fair play. There have been instances on other railways, where the specifications have been in the hands of favored firms long previous to the advertising for tenders, which was only done to "save face". The advertisement called for the opening of tenders in three weeks time, or sufficient to enable the Continental and British agents to mail the Specification home, receive their price by cable, and the tenders opened and the contract awarded before the mail could reach America. So to insure fair play to the American manufacturer, the time should be lengthened. Aside from the spirit of fair play involved, the practice of short time advertisements for tenders is a gross imposition on the business community of Shanghai, who are compelled to use the cable if they wish to compete. It is safe to say that the disregard for this feature by the manage-

H. H. Prince Na (Nayentu), Grand Chamberlain of the Court.

Dsazzak of the Khelka Mongols. Son-in-law of Prince Ching

ment of the Tientsin-Pukow Railway cost the firms of Shanghai, in the aggregate, more than the entire profits realized on the sale of materials to the line. One locomotive tender in which 40 firms participated the cable tolls must have reached $20,000 gold. Any system which will relieve the merchants from this unnecessary drain would meet with hearty applause.

I have pointed out a condition and suggested the remedy. If the Chinese authorities desire to be impartial and retain the good will of foreign manufacturers, and uphold their end of the Open Door doctrine, they will take action to alter present practices. Procrastination will not avail, as the situation must be faced now squarely and fairly. China's credit and prestige is at stake. If former discrimination and extravagance mark the construction of the Hukwang Lines, China's credit will be irretrievably lost. The loan of $50,000,000 to construct 1200 miles of railway, is only $40.000 per mile.

The American section of 200 miles through a mountainous country may well cost $100.000 per mile or $20,000,000 If the British Kowloon-Canton Railway cost over $200,000 per mile, and the French narrow gauge line in Yunnan over $60 000, no undue criticism could be directed against a cost of $100,000 for the American section. This leaves $30,000-000 to build 1000 miles of railway. Under purely Chinese management a suitable line might be constructed for this cots, but experience has taught us that loan roads built under foreign supervision are more costly. With all charges, it is fair to estimate the cost of the line at $50,000 gold per mile or a total of $70,000,000 for the entire system And only by the most careful economy and strictest honesty can the lines be built within this figure. With every resource of the Empire already hypothecated, it is difficult to conjecture where China will find the necessary guarantees for future loans, if the present policy of borrowing is continued. With a constantly increasing deficit in the Imperial and Provincial treasuries, and all possibl revenues mortgaged, the end will come, unless corruption ceases.

The world will watch with great interest the progress of the Hukwang Lines, as it is China's last opportunity to prove her good faith.

FAR EASTERN RAILWAY NEWS

CONNECTING SHANGHAI-NANKING AND SHANGHAI-HANGCHOW RAILWAYS.—Plans are completed for the junction between these two lines which will be placed under one administration when the connection is completed. This will be effected by a line running eastward from the Nanking line between Ferry Road and Jessfield and joining the Hangchow railway near Loonghwa Pagoda west of Sicawei Road.

THE KILIN-CHANGCHUN LINE.—In discussing the probability of the early completion of this line the Japan press is quoted as stating that more funds than originally estimated will be necessary to complete the work.

JAPANESE ROLLING STOCK.—The manager of the Japan Rolling Stock Co. estimates that in the next decade the Government railways will require 500 locomotives to meet the extensions proposed besides a large number required for private lines.

AMERICAN LOCOMOTIVES FOR JAPAN.—The American Locomotive Co. has secured orders for 5 engines for use on the Antung-Mukden division of the South Manchuria Railway and 6 engines for use on the Government railways in Chosen. The first award represents one-half of a purchase of 10 locomotives of the "10-wheeler" type. The order for the other 5 has been placed with Beyer, Peacock & Co., an English firm, which competed in the bidding with the American Locomotive Co. The latter company also recently secured a large order for locomotives for use on the Imperial railways of Japan. This latter order calls for 30 of the Pacific type and 6 of the Mallet type.

TIENTSIN-PUKOW TRAFFIC.—The passenger service on the Tientsin-Chinan section now includes a daily service instead of the former semi-weekly trains. These are exclusive of construction trains.

JAPAN'S WIDE GAUGE CONFERENCE.—The discussion has developed that the cost of the maintenance and necessary improvement of the present narrow gauge system of the Empire from 1912 to 1940 would reach yen 269,650,000 wheras if converted to the standard gauge the maintenance and improvement for the same period would reach yen 290,640,000, a difference of yen 21,000,000. On the other hand if the narrow gauge were adapted the necessity for construction and improvements to keep pace with the development of the country and increased traffic would mean an outlay of yen 1,270,000,000 while the cost of constructing the standard gauge with the exception of the Kyushu and Hokkaido lines would reach yen,1,427,000,000.

CHOSEN RAILWAY PURCHASE.— The private line connecting the colliery at Sadong and Pyongyang, a distance of nine miles, has been taken over by the Railway Bureau.

F. M. S. RAILWAYS.—A through night service has been inaugurated between Singapore and Kuala Lumpur, July 1st, by which the trip is made in less than twelve hours and with the extension of this service the distance from Singapore to Penang will be covered in 24 hours. The special train that inaugurated this service made splendid time on the F. M. S. section, but the fourteen miles of the Singapore Government line consumed 75 minutes. The special carried a modern dining saloon car constructed in the railway shops and sleeping cars have been ordered from the Metropolitan Railway Carriage and Wagon Co. of Birmingham.

F. M. S. ANNUAL REPORT FOR 1910.—General Manager Anthony's report indicates a prosperous year. There was a decrease in minerals carried but a large increase in product and footstuffs, while double the quantity of rubber was transported compared with the previous year.

Passenger receipts show a satisfactory increase, particularly the 3rd class, which increased 24.27 per cent in number. Gross earnings from all traffic increased by 13.11 per cent. Working expenses decreased by 2.11 per cent. Net earnings increased by 50.90 per cent.

The mileage opened for traffic on December 31, 1910, was 538 miles 75 chains, the length added during the year was 68 miles 48 chains.

The dividend earned by the open lines (exclusive of motor services) on a capital of $51,335,128.16 was 4.35 per cent., or a net profit for the twelve months of $2,236,231.14, as compared with 3.18 per cent. in the previous year. The aggregate net profits earned by the Federated Malay States Railways from the commencement, 1885, to the end of 1910, amounted to $21,178,044.68. Taking the open lines of railways and motor services together, the profit amounted to $2,159,814.01 (profit Federated Malay States Railways $2,236,231.14 less loss on motor services $76,417.13), equal to 4.17 per cent. on a capital account of $51,784,083.53.

MANILA-ANTIPOLO LINE.—The promoters of the Antipolo Hotel Co. have concluded an arrangement with the Manila Railroad Company for special rates to and from Manila. These rates will apply to special morning and evening trains for the purpose of carrying commuters to and from Manila. The schedule of rates follows: First Class: Tickets good for one year—₱225; half year—₱125; three months—₱82. Second class tickets will be sold as follows: good for one year—₱170; half year—₱110; three months—₱57.

The trains will leave Manila at 6 o'clock in the evening and Antipolo at 7 o'clock A. M. The purpose is to accommodate Manila business men taking up their residence at Antipolo, a cool mountain town.

CHINESE RAILWAYS TO BE NATIONALIZED.—According to the *Sinwanpao* the following lines will be included in the program of nationalization:

The Kirin Changchun Railway—The line is under construction and the total length is 80 li which will be extended from Kirin to Chientao for 240 li after the line between Kirin and Changchun is completed.

The Chingchow Aigun Railway—The contract was signed in 1910 with a British Syndicate for a length of 750 li to be built by the said British Contractors with British funds.

The Kalgan Shuiyuancheng line—The length is 180 li and it has been built up to Chiaichupao to be extended to Kulun (Urga) and Kiakhta.

The Chenting Tehchow line—The length is 110 li to connect the Peking-Hankow and the Tientsin-Pukow Railways at Tehchow but work is not commenced yet.

The Chefoo Weihsien line—From Chefoo to Weihsien the length is 170 li. The Shares of the Company are not subscribed yet and it will become a government undertaking.

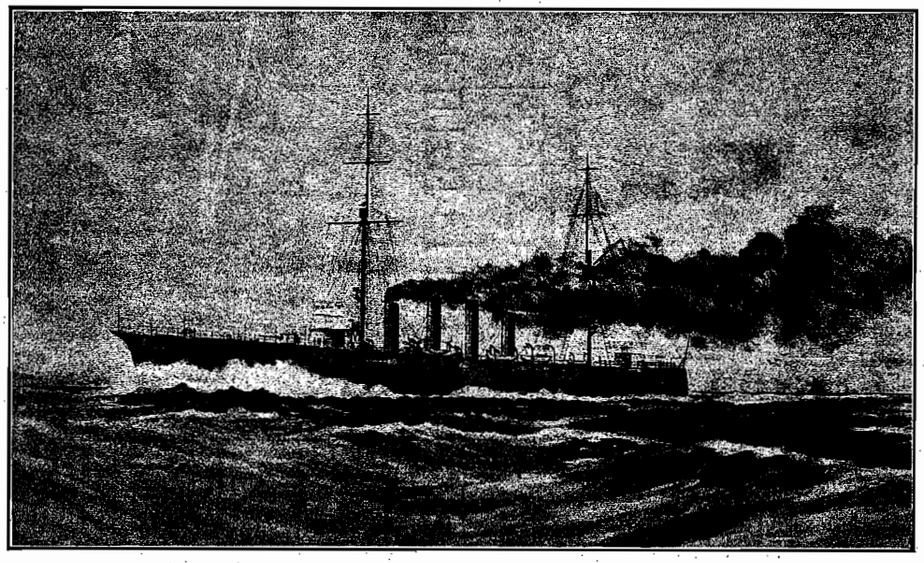
NEW JAPANESE CRUISER

The launching of the Japanese armored cruiser Hirado from the Kawasaki Dockyard at Kobe the latter part of June marked the beginning of a new-era in naval construction in the history of the Kawasaki Dock Company. Heretofore the warships turned out at the company's included vessels of about 1,500 tons, among which were gunboats for Siam, Korea, China and Japan and destroyers and submarines for the Japanese navy. The cruiser Hirado, however, has a displacement of 4,955 tons and orders have been placed for another cruiser at this company's yards at Kobe. This is significant of the enterprise of the management.

The official description of the Hirado follows:

Class	2nd class cruiser.
Tonnage	4,950 tons.
Length	475 feet.
Beam	46.6 feet.
Depth	28 6 feet.
Draught	16.7 feet.
Horse-power	22,500.
Speed	26 knots.
Engines	Latest Turbine.
Boilers	Water-tube style.

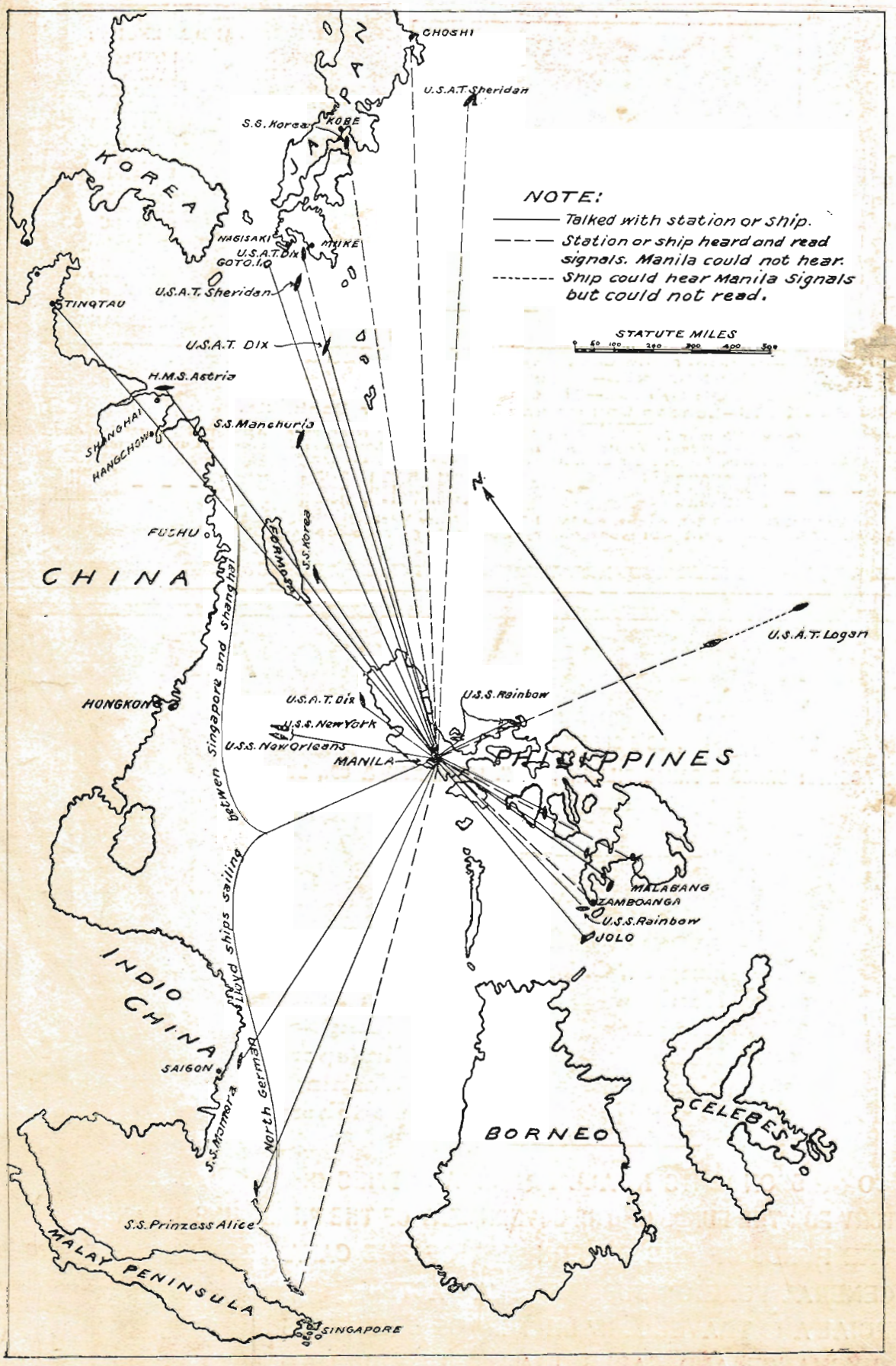
The occasion of the launching was made memorable by the presence of H. I. H. Prince Kita Shirakawa, accompanied by Baron Saito, Minister of the Navy, Vice-Admiral Baron Ijuin, Vice Admiral Kato and Inspector General Fukuda. A collation was served after the ceremony at which Mr. Kawasaki, vice president of the company, Baron Saito, and Governor Hattori delivered short addresses. Among the official guests were Sir Douglas Brownrigg, Naval Attache, British Embassy, Captain Shipley, U. S. N., Attache, American Embassy, and a large number of foreign naval officers.



H. I. J. M. SECOND CLASS CRUISER "HIRADO."
(CONSTRUCTED AT THE KAWASAKI DOCKYARD CO., LTD.)

THE FAR EASTERN REVIEW

VOL. VIII.—No. 4. MANILA AND SHANGHAI, SEPTEMBER, 1911. 25 cents, U. S. Cy.



[Prepared by Sergt. J. R. Shettel, Signal Corps, U. S. Army.]

TRANSMISSION RESULTS OBTAINED FROM A 46-KILOWATT (PRIMARY ENERGY) WIRELESS TELEGRAPH STATION (TELEFUNKEN SYSTEM) ERECTED BY GERMANN & CO. AT MANILA, P. I., OPERATED UNDER THE DIRECTION OF CAPT. L. D. WILDMAN, SIGNAL CORPS, U.S. ARMY, FOR THE INFORMATION OF THE PHILIPPINES JOINT WIRELESS BOARD.

Development of the South Manchuria Railway Company

Imperial Taiwan Railways

Wireless System Proposed for the Philippines

Tangshan Engineering College

Philippine Lumber for an Emperor's Mausoleum

OBK 11410

THE FAR EASTERN REVIEW

COMMERCE • ENGINEERING • FINANCE

VOL. VIII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, SEPTEMBER, 1911 No. 4.

THE DEVELOPMENT OF THE SOUTH MANCHURIA RAILWAY Co.

In August, 1905, the Japanese Government, by virtue of Art. 6 of the Treaty of Peace between Russia and Japan, acquired the Railway main line from Changchun to Port Arthur, together with its branch lines and all the rights, privileges, and properties attaching thereto, including the coal mines formerly owned by the Chinese Eastern Railway. On June 7, 1906, an Imperial Ordinance was issued concerning the establishment of the South Manchuria Railway Company; and on July 13 of the same year General Viscount G. Kodama was appointed President of the Organization Committee, composed of 81 members. But in consequence of the death of Viscount Kodama, which occurred on July 24, Viscount Terauchi, Minister for War, assumed the presidency on July 25. On August 1 the Government forwarded to the Committee the conditions pertaining to the establishment of the South Manchuria Railway Company; and after the formation of the company had been prepared by the committee on the basis of the Imperial Ordinance and in accordance with the conditions of the Government, the Articles of Association were approved by the Government on August 18. The subscription for shares took place from September 10 to October 15; and the establishment of the Company was finally sanctioned by the Minister of Communications on November 1.

The Board of Directors is composed of the following officials: 1 President, 1 Vice-President, and at least 4 Directors; besides whom the Company has from 3 to 5 Auditors.

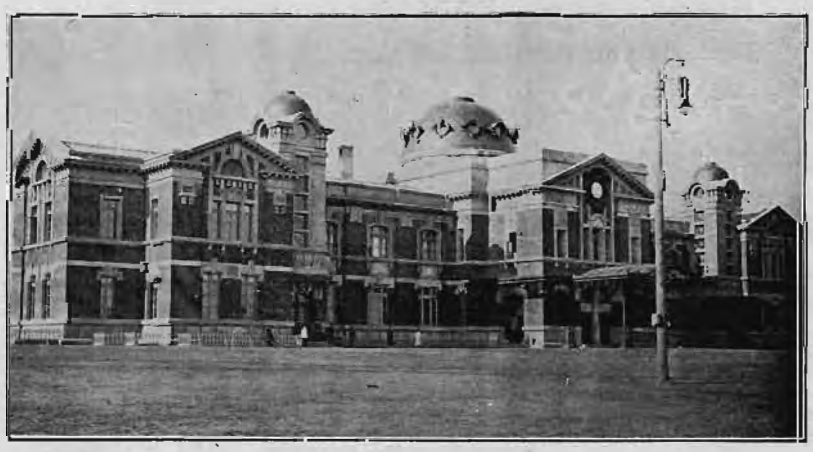
Both the President and the Vice-President are appointed by the Government with Imperial sanction; the Directors are also appointed by the Government from amongst shareholders owning at least 50 shares; whilst the Auditors are elected at the General Meeting of Shareholders.

In accordance with these regulations, on November 13, 1906, Baron S. Goto was appointed President; Mr. Z. Nakamura, Vice President; and Mr. S. Kunisawa and five other gentlemen, Directors of the Company. At the General Meeting, which took place on the same day, Mr. T. Nakahashi and four other shareholders were elected Auditors. On November 27 the President of the Organization Committee handed over all matters connected with the establishment of the Company to the newly-appointed President of the Company; and the registration of the Company was effected on December 7 of the same year. In consequence, however, of the appointment of the President, Baron Goto, to be Minister of Communications, which took place on December 19 following, the Vice-President, Mr. Nakamura, was appointed President, whilst Director Kunisawa was raised to the position of Vice-President.

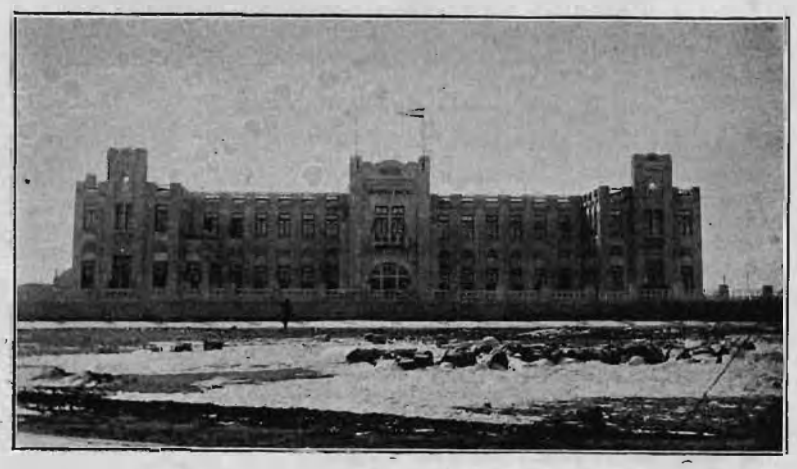
The Board of Directors at the present time is composed of the following members:—President, Mr. Z. Nakamura; Vice-President, Mr. S. Kunisawa; Directors, Messrs. C. Seino, K. Kubota, N. Inuzuka, S. Tanaka, M. Kubota, Prof. S. Okamatsu, LL. D., and Mr. K. Nonomura; Auditors, Messrs. T. Nakahashi, K. Kawakami, H. Taki, K. Magoshi, and S. Iwashita.

The authorized capital of the Company is two hundred million yen, which is divided into one million shares of 200 yen (about £20) each. The Japanese Government owns half of the total authorized capital, viz., 100 million yen, which is its share for the handing over to the Company of the complete

S. M. R. YAMATO HOTEL AT STAR BEACH



S. M. RY. YAMATO HOTEL AND STATION AT MUKDEN



S. M. RY. YAMATO HOTEL AT CHANGCHUN

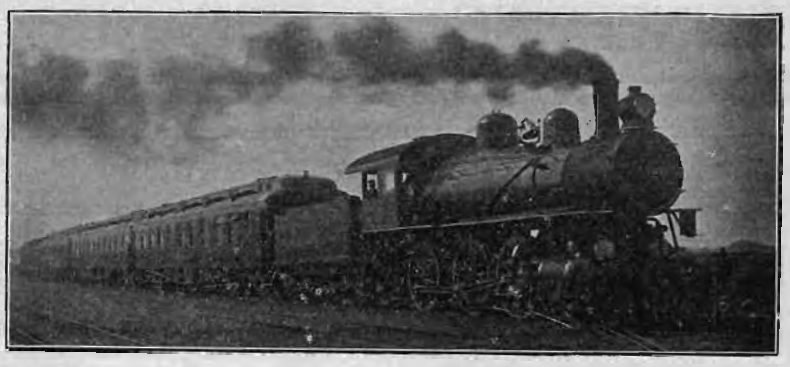
railway lines in Manchuria with the properties attaching thereto (except the rolling stock and the rails and accessory materials on the Antung-Mukden line) and the coal mines of Fushun and Yentai—altogether of an assessed total value of 100 million yen.

and properties to the south of Kwanchengtzu Station, together with the coal mines of Shihpailing and Taochiatun and their appurtenances, were formally transferred to the South Manchuria Railway Company between July 15 and July 18, 1907.

the Antung-Mukden line, which was only 2 feet 6 inches. This, however, does not include the line from Mukden to Hsinmintun, which though originally included in the system, acquired by the Company, was ceded to China, as before mentioned.

Immediately after the acquisition of the above railways, the Company commenced, and without the slightest interruption of traffic, executed their reconstruction to the standard gauge of 4 feet 8½ inches—except the Antung-Mukden line—and also the doubling of the track between Dairen and Suchiatun, a distance of 238⅓ miles. So expeditiously was this performed that as early as November, 1907, traffic on the standard gauge was opened on the Port Arthur line, and on June 1, 1908, the entire main line, as well as the Fushun and Yingkou branch lines, had been rebuilt and completed. It was a source of great satisfaction to the Company to have been able to express its hearty approbation of the work done by its engineers on that occasion, for within the short time of one year, and in spite of many adverse circumstances and difficulties of every kind consequent upon the great war, they had succeeded in widening the gauge on more than 500 miles of railway line, at the same time erecting more than 200 locomotives and 2,500 cars newly received, thus making it possible for the Company to effect the change to standard gauge practically without interruption of traffic for a single day and without the slightest obstruction.

In order to improve the through traffic between Europe and the Far East, the Company inaugurated in October, 1908, an express service

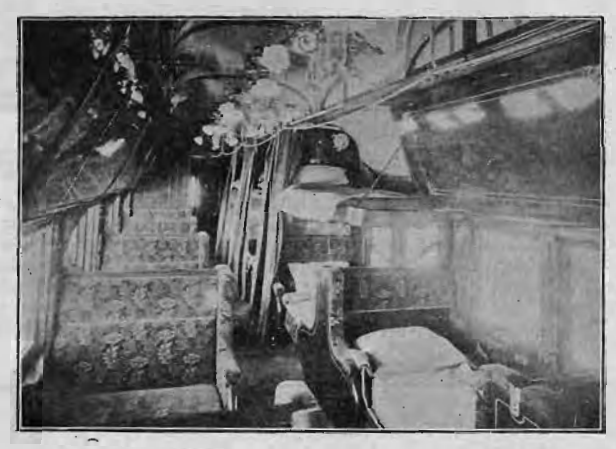


S. M. R. EXPRESS
COMPLETE PULLMAN VESTIBULE TRAIN

The other half, viz., 100 million yen, was made available for subscription to and taken up by Japanese and Chinese subjects only; and the shareholders are guaranteed a dividend of 6 per cent. per annum by the Japanese Government. Owing to the economic conditions in Japan at the time of the establishment of the Company, however, the first issue of shares was limited to the amount

With the object of raising, largely through debentures, the funds required for the reconstruction of these railways, as well as for the subsidiary undertakings described below, the Company has up to the present time issued in London three separate issues of debentures of a total amount of eight million pounds sterling at the uniform rate of interest of 5 per cent., both capital and interest

PULLMAN DINING CAR
S. M. RY.



PULLMAN SLEEPING CAR
S. M. RY.

of 20 million yen, of which only one-tenth was called up. Hence the shares not yet issued amount to 80 million yen, whilst the share capital subscribed but not yet paid up is 18 million yen.

On April 1, 1907, the Company took possession of, and commenced operations on, the following properties, which constitute the investment of the Government:—

1.) The railway lines between Dairen and Changchun; Nankuanling and Port Arthur; Tashihchiao and Yingkou; Yentai on the main line and the Yeutai coal mine; Suchiatun and Fushun; and Antung and Mukden.

2.) The machinery, implements, and other material actually in use on the above railways and mines, and also on the railway line between Mukden and Hsinmintun.

3.) The properties in land, buildings, and other establishments, both within and without the Kwantung Leased Territory, belonging to the above railways and mines.

The Mukden-Hsinmintun Railway, with all its appurtenances, was ceded to the Chinese Government by reason of an agreement entered into on April 15, 1907, its actual transfer taking place on June 1 of the same year; and in fulfilment of an agreement entered into in June, 1907, with the Russian Government at St. Petersburg, the railway lines being guaranteed by the Japanese Government. The following is a list of the debentures issued:—

1st Issue: 4 million pounds sterling, issued on July 19, 1907, redeemable within 25 years.

2nd Issue: 2 million pounds sterling, issued on June 1, 1908, redeemable within three years.

3rd Issue: 2 million pounds sterling, issued on December 16, 1908, redeemable on July 23, 1932.

The Industries and Enterprises of the Company. *The Railways.*—The Railways acquired from the Government on April 1, 1907, are as follows:—

The main line between Dairen and Changchun (437½ miles); the Port Arthur branch line (39 miles); the Liushutun branch line (3½ miles); the Yingkou branch line (13 miles); The Yentai branch line (9¾ miles); the Fushun branch line (39 miles); the Antung-Mukden line (189 miles).

The gauge of the whole of the above railways when acquired from the Government was 3 feet 6 inches, with the exception of that of

between Dairen and Changchun, consisting of Pullman sleeping and dining cars of the latest type. The express trains run three times a week, and connect at Changchun with the Siberian trains of the International Sleeping Car & Express Train Co. and Russian State Express, and at Dairen with the steamship service operated by the Company between Dairen and Shanghai twice a week. In accordance with the terms of a provisional convention concluded by the Russian and Japanese Governments on June 13, 1907, respecting the through traffic on the Russian and Japanese Railways in Manchuria, this Company entered into an agreement with the Chinese Eastern Railway Company respecting the passenger and baggage through traffic, which was approved by the Japanese Government on December 1, 1909.

An agreement has also been made with the Imperial Japanese Government Railways, the Osaka Shosen Kaisha (Osaka Mercantile S. S. Co.), and the Nippon Yusen Kaisha (Japan Mail S. S. Co.) regarding through transportation of cargo. This was put into effect from the 1st of January, 1911, simultaneously with through goods traffic between Shanghai and the principal stations on this Railway.

By virtue of these arrangements, immense facilities are now obtainable in through cargo transportation at this Company's principal stations with many ports in the East, as well as in Europe, Australia, and the United States of America, regularly touched by the Nippon Yusen Kaisha and Osaka Shosen Kaisha steamers.

The doubling of the railway track on the section between Dairen and Suchiatun also progressed rapidly, and the double line was opened for traffic in its entire length on October 27, 1909.

The reconstruction of the Antung–Mukden narrow–gauge line to standard gauge was commenced in August, 1909, and proceeded so rapidly that the Mukden–Shihchiaotsu section (35 miles) was opened for traffic on November 3 of the same year; the Antung–Chikuanshan section on November 3, 1910; and the Shihchiaotsu–Penhsihu section by the end of December, 1910. With regard to the remaining section, from Penhsihu to Chikuanshan (73 miles), notwithstanding considerable engineering difficulties that are almost constantly being met with, so remarkable a progress is being made that it is expected the work will be completed by March, 1912.

The Yingkou branch line, which formerly had its terminus at Niuchiatun, has been extended as far as the new Japanese town of Yingkou, where a new station was built and opened for passenger traffic in November, 1909, and the old station is being utilized as a goods office.

The reconstruction of the Yentai branch line, which became necessary in consequence of the increased output of the Yentai coal mine, was also completed; and on March 1, 1910, goods trains commenced to run betweeu Liaoyang and the Yentai coal mine.

The Liushutun branch line, though at present not in operation, has also been reconstructed to standard gauge in accordance with an order from the Home Government.

The reconstruction of all the railways enabled the Company to dispense with the rolling stock of narrow gauge, which was therefore sent back to Japan in 1908. This comprised 217 locomotives, 3,727 goods cars, and 157 passenger cars.

The rolling stock in use at the end of the first half of the working year 1910 was as follows:—

On the main and branch lines of standard gauge: 216 locomotives, 2,315 goods cars (2,190 thirty-ton cars and 125 fifty-ton coal cars), and 125 passenger cars.

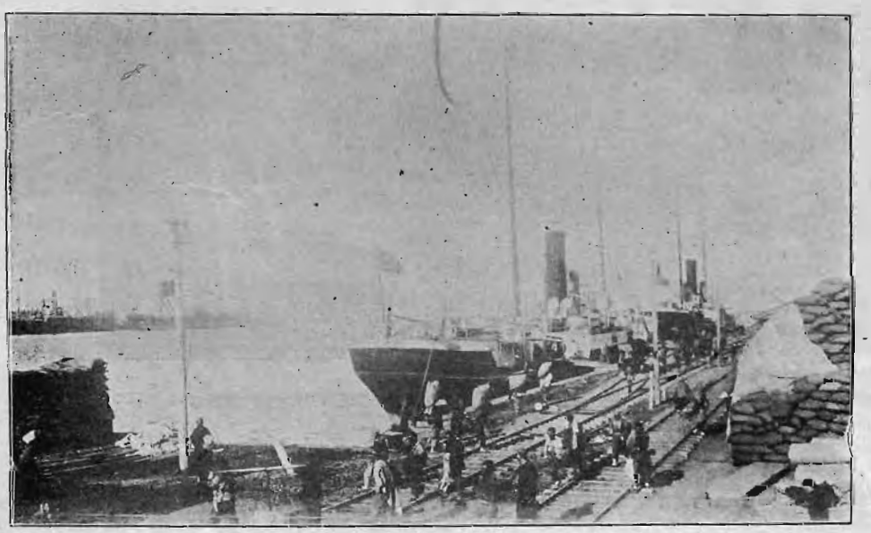
On the Antung–Mukden light rail line: 82 locomotives, 650 goods cars, and 54 passenger cars.

Originally, a central railway workshop had been erected in Dairen for the construction of rolling stock, repairs, and other works, not only to meet the requirements of the company but also those from outside. Besides this central workshop, small workshops for the repair of rolling stock, machinery, and implements were established in Liaoyang, Kungchuling, and Antung. However, as these workshops soon proved to be altogether too small and insufficiently equipped to cope with the ever–increasing demand, it was decided to erect a new and in every respect modernly equipped workshop on an extensive scale at Shahokou near Dairen; and this is now fast nearing completion. When completed, this workshop will be able to execute repairs at once on 20 locomotives and 46 goods cars of 30 tons each, and at the same time construct and repair other railway materials, mining machinery, etc. The Company also intends to gradually enlarge and improve the other workshops.

MOUNTAINS OF BEANS AWAITING SHIPMENT AT DAIREN

The passenger and goods traffic has been steadily increasing since the commencement of the Company's business, as will be seen from the following business returns for half-years. (In this connection, however, it must be observed that beans and bean cakes form by far the greater portion of the goods traffic, and since the transportation of this produce from the interior to the railway and from the railway to the ports must of necessity be mainly done during the winter season it naturally follows that the revenue during the second half of each working year must be greater than that of the first half. In order, therefore, to arrive at a proper conclusion with regard to the financial progress achieved so far, it is necessary to compare winter and summer half-years between themselves).

PILES OF BEANS AND BEAN CAKE AWAITING SHIPMENT ON DAIREN WHARVES.



LOADING SCENE AT DAIREN WHARVES.

Working year.	Term.	Passengers.	Tonnage of goods. (American Tons)	Receipts in yen.	Expenditure in yen
1907	1st Half	704,300	533,283	4,093,425	2,757,446
	2nd Half	807,981	953,151	5,675,462	3,341,168
1908	1st Half	910,946	1,083,064	4,372,751	2,537,589
	2nd Half	957,194	1,625,972	8,164,391	2,573,818
1909	1st Half	1,029,418	1,756,225	5,858,158	2,609,968
	2nd Half	1,149,644	1,812,302	9,158,040	3,208,365
1910	1st Half	1,324,952	1,670,271	5,594,767	3,015,832

Shipping.—The increasing through traffic from Europe to the Far East, as a result of the reconstruction of the railways, induced the Company to institute a regular steamship service between Dairen and Shanghai by chartering the steamer "Kobe Maru" from the Nippon Yusen Kaisha; and this service was opened on August 10, 1908.

This steamship line connects the shortest and quickest route from Europe to Shanghai, and as an annex to the South Manchuria Railway line is equally important for passenger and goods traffic as well as for mails. As the advantages of this route have become to be generally recognised, this steamship service has gradually expanded, so that it became necessary to charter another steamer from the same steamship company; and the "Shikio Maru" chartered in May, 1909, now runs alternately with the "Kobe Maru" on this twice-weekly service.

The following figures give the results of the passenger and goods traffic during the last five half-years:—

Working year.	Term.	Passengers.	Freight tonnage (American Tons)	Receipts in yen.	Expenditure in yen.
1908	1st Half	190	495	5,831	39,553
	2nd Half	1,536	10,264	66,750	164,646
1909	1st Half	1,985	13,735	90,163	230,722
	2nd Half	2,340	17,821	101,075	215,574
1910	1st Half	2,368	20,170	117,377	225,418

The Harbour.—As regards the construction of Dairen Harbour, it is intended mainly to follow the plan originated by the Russians, and to complete the works left unfinished. The principal construction works taken over and executed so far by the Company are as follows:—

(1) The construction of the East Breakwater, which stretches out from the northern end of the East Quay towards the north-east, and is 1,221 feet long, 20 feet wide at the top, and 19 feet above water at low tide. Between the East and the North Breakwaters a sea passage 1,200 feet wide is left open. About 70 per cent. of all the construction works have been completed up to date (January, 1911).

(2). The wall of the East Quay. The southern part of the quay had been completed and the construction of the northern part commenced by the Russians. It was decided to take down the uncompleted part, and construct in its stead another wall extending from north to south and from east to west. This quay wall is 909 feet long, 540 feet wide, and 30 feet above low water. More than 57 per cent of this work has been completed.

(3). The Northwest Breakwater. Stretching from a point about 1,200 feet distant from the end of the East Breakwater towards northwest, this breakwater is to be 12,500 feet long, from 10 to 20 feet wide at its crest, and from 17 to 19 feet above low water. So far, 16 per cent. of this work has been completed.

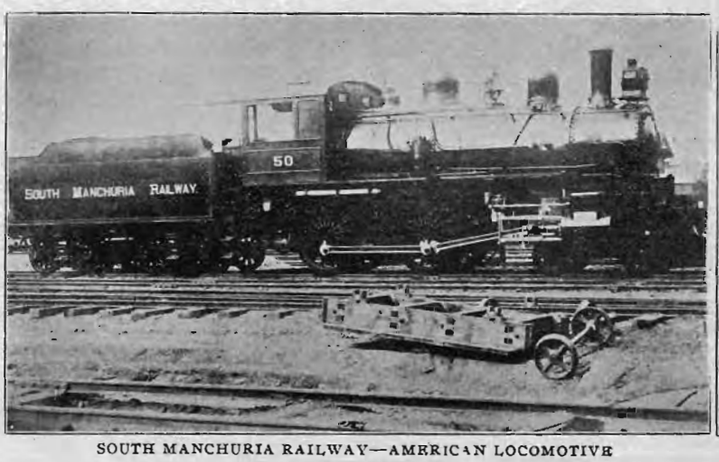
(4). The dredging of the port. The total quantity of mud to be dredged is estimated at 15 million tons, of which at present only 20 per cent has been removed. But the steam dredger, "Heito Maru," of 573 tons, constructed on the latest plan by Messrs. Ferguson Bros., of Glasgow, at a cost of about £30,000, is now on her way from Europe to Dairen, where she is expected to arrive in April next. The work of dredging the port will then be taken in hand with much greater celerity and thoroughness.

Reclamation work on the east coast of the city of Dairen is also shortly to be commenced; and besides the repair and construction work on the east quay-wall, the construction of an embankment at the Public Wharf (Junk Wharf) on the northern coast of the city is being steadily pushed forward.

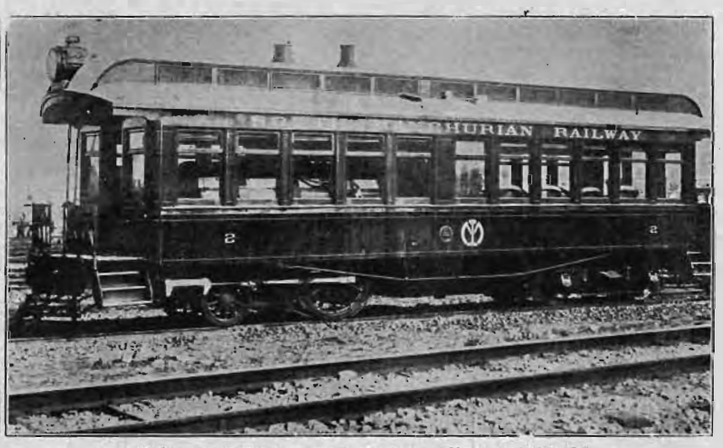
The facilities of the harbour have been improved by the introduction of steam launches, warehouses, sheds and several other accommodations calculated to further the convenience of the passenger and goods traffic. The loading and discharging of goods at the port, which had hitherto been entrusted to numerous forwarding agents, was in October, 1907, brought under the direct management of the Company; and this step has been entirely justified by the subsequent improvement in the method and work of transportation. The amount of goods entering and leaving the port of Dairen increases

FUSHUN COAL MINES: COLLIERY HOSPITAL AT CHIEN-CHIN-CHAI

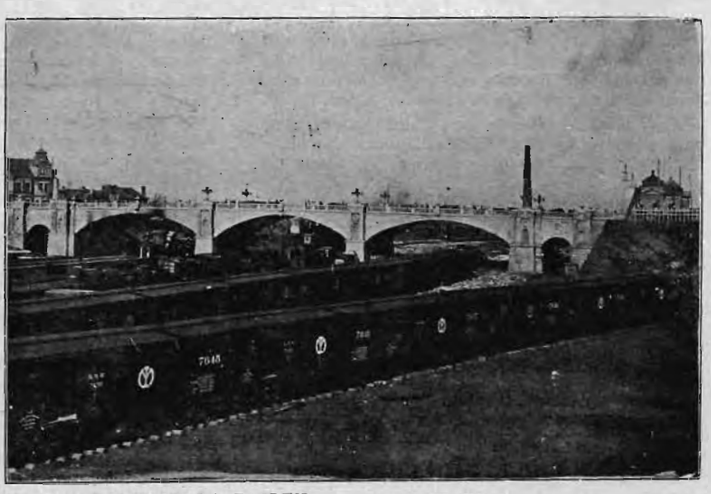
FUSHUN COAL MINES: SUCHATUN JUNCTION STATION, WHERE THE RAILWAY BRANCHES FROM THE MAIN LINE OF THE MINES



SOUTH MANCHURIA RAILWAY—AMERICAN LOCOMOTIVE



SOUTH MANCHURIA RAILWAY—MOTOR CARRIAGE



SOUTH MANCHURIA RAILWAY.—VIEWS OF NIPPON BRIDGE, DAIREN

year by year, and during the winter season especially the pressure in the port is enormous, making it utterly impossible for manual labour (the only labour up till now used in the port) to satisfactorily cope with the traffic. With a view to obviate this difficulty, the introduction of grain-elevators is now under consideration. Moreover, attention is also being paid to the introduction of especial loading devices for coal cargoes.

The following are the financial results of the harbour administration since coming under the direct management of the Company:—

Working year.	Term.	Number of ships arrived at Wharf.	Tonnage of goods loaded and discharged (American Tons).	Receipts in yen.	Expenditure in yen.
1907	2nd Half	633	417,315	425,644	496,526
1908	1st Half	659	340,737	319,795	328,276
	2nd Half	738	729,393	701,033	518,470
1909	1st Half	673	610,171	637,166	533,590
	2nd Half	703	756,428	743,565	599,702
1910	1st Half	772	604,161	474,080	417,796

On April 1, 1910, the Company was granted a concession by the Government authorizing it to make use of the port of Port Arthur to erect there a pier for the loading of coal, and to dredge part of the port. The completion of these works will constitute an important step towards the expansion of the coal export trade.

Coal Mines.—The Fushun Colliery is situated about 22 miles east of Mukden as the crow flies. The coal field, running for about 12 miles parallel with the river Hun, shows an average gradient of about 30 degrees in the direction of the river. The coal deposits are from 80 to 175 feet in thickness, an average of about 130 feet, and contain at least 800 million tons. At the time of the acquisition of the colliery by the Company, the mining arrangements were of a temporary nature, with a daily output of 360 tons, which was all expended to meet the military requirements only. In consequence, however, of the extensive introduction of machinery and other improvements, the total daily output of the seven pits now in operation has been increased to 3,000 tons.

Work has also been taken in hand to sink a pair of shafts about 1,100 feet deep in Chienchinchai and Yangpaipu, of which one is to have an open diameter of 18 feet and the other of 21 feet. The shaft in Chienchinchai has been named Oyama Pit, and the one in Yangpaipu Togo Pit. At the first pit, on which the work of sinking was commenced in November, 1907, the coal bed was reached on December 1, 1909, at a depth of 1,160 feet, whilst at the latter pit sinking operations were started on November 19, 1908, and the coal seam was reached at a depth of 1,102 feet. When Oyama and Togo Pits are completed the daily output is expected to reach 2,500 tons per day from each pit.

The following figures show the total output mined during the several business periods:—

Working year.	Term.	Tons (English)
1907	1st Half	94,893
	2nd Half	138,432
1908	1st Half	204,529
	2nd Half	386,191
1909	1st Half	335,467
	2nd Half	370,575
1910	1st Half	415,047

Besides mining operations at Fushun, the building of the new Japanese town of Chienchinchai, electricity, gas, and water works, school and hospital, etc., call for special notice. The construction of the new town is making satisfactory headway. The electricity works commenced the supply for lighting and industrial power in December 1908, and the consumption reached 957,451 kilowatts in the first half of year 1910. The distribution of gas and water has also been commenced, and nearly five million cubic feet of gas have already been supplied. The school has now an attendance of 1,380 children, whilst the hospital during the first half-year of 1910 gave treatment to 8,975 cases. It has also been decided to establish a technical school in Fushun, which is to be opened in April, 1911.

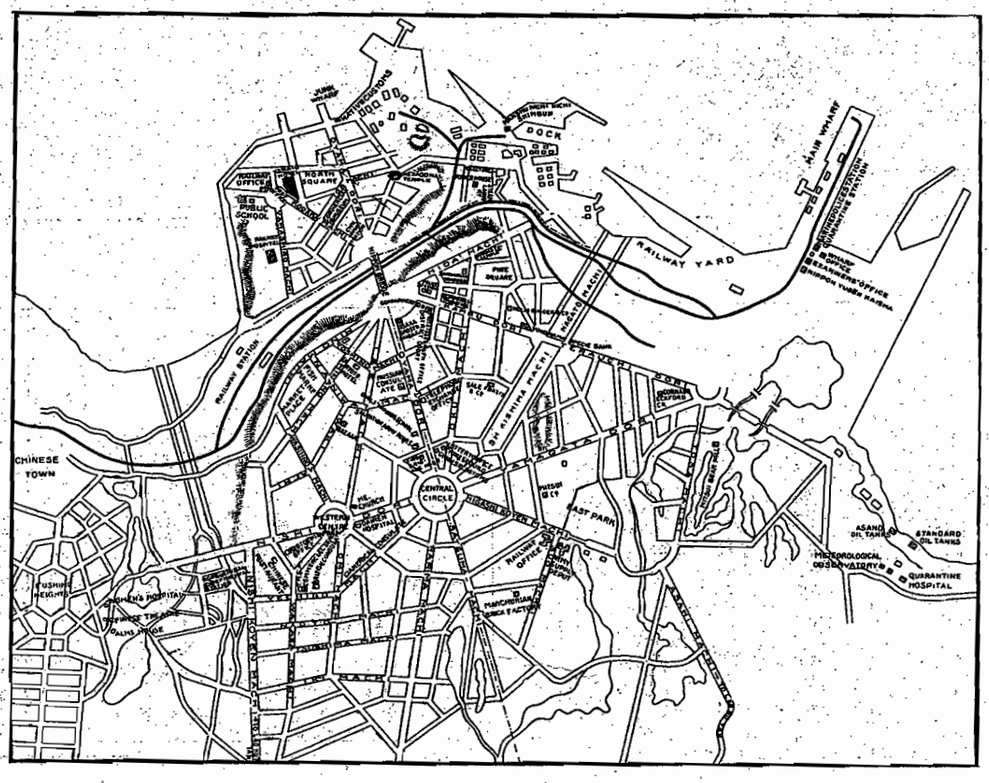
The demand for coal in Manchuria shows an increasing tendency. As a result of the efforts made by the Company to promote the introduction and adoption of the use of coal in bean mills and other factories, the total sale of coal during the first half of the working year 1910 amounted to 111,123 tons, whilst the total exported to Shanghai, Canton, Hongkong, Singapore, Tientsin, Hankow, Chefoo, Harbin, Korea (Chosen), and other parts of the world amounted to 182,601 tons. A first trial shipment of coal to Shanghai, made in the second half-year of 1907, met with such success that the Company has since extended the experiment to other places. Since April 27, 1910, the steamer "Buyo Maru" (1,813 net registered tons) has been chartered for the transport of coal chiefly to Hongkong, and another steamer, the "Omuro Maru" (1779 net registered tons) for the transport chiefly to Canton.

The following figures show the various quantities sold, and the business results of the mining operations:—

Working year.	Term.	Sale of coal in tons.	Mining Receipts in yen.	Mining Outlay in yen
1907	1st Half	76,949	647,066	848,251
	2nd Half	125,871	987,154	882,963
1908	1st Half	211,508	1,822,503	814,144
	2nd Half	231,705	1,840,119	869,189
1909	1st Half	344,457	1,983,227	1,355,672
	2nd Half	369,593	2,042,598	1,440,698
1910	1st Half	419,248	2,217,807	1,593,570

Electricity.—The Russians had made but a small and crude beginning towards furnishing the city of Dairen with the uses and advantages of electricity. When taken over by the company from the Japanese Government, the plant was merely an imperfect means of telegraphic and telephonic communication; but thanks to the zealous efforts made by the company's management a supply of power for lighting and industrial purposes was commenced as early as October, 1907; and as the demand soon exceeded the supply, it was decided to increase the power to 3,000 kilowatts. The work of extension was put in hand in the second half of 1908, and two motor engines with accessory plants of a productive power of 1,000 kilowatts were shortly afterwards put in operation.

The company also resolved upon the construction of electric tramways through the streets of Dairen to an aggregate length of 13 miles, the larger portion of which has been completed and is in use. The tram fares are uniform for the city lines, and are priced on the time limit basis. The cars are divided into first-class and second-class compartments, and the fares are 5 sen (1¼ d.) for half-an-hour and 6 sen (1½ d.) for an hour for first-class passengers, and a sen (or



MAP OF DAIREN (DALNY)

farthing) cheaper for second-class passengers. The tickets are punched at the time limit by reference to a clock in the car, and are available for any number of rides on any line within the half-hour or hour as the case may be. The erection by the Company of large railway workshops at Shahokou and of a sea-side hotel at Hoshigaura (Star Beach), one of the finest seaside resorts in North China, rendered it necessary to lay a suburban line, which connects with the city lines. The running on the suburban line was commenced on January 1, 1911, the single fare for the whole route being 2½ d. and 2 d. for first and second classes respectively.

Furthermore, as an accessory to the electrical enterprises, an electric park was laid out and opened for public amusement on September 25, 1909. Though the park management was at first undertaken by a private resident, it is now controlled by the Company itself.

The following table shows the growth of the electricity undertakings in Dairen, Mukden, and Changchun:—

	Working year.	Term.	Dairen. Aggregate quantity produced in kilowatts.	Dairen. Receipts in yen.	Dairen. Outlay in yen.	Mukden. Aggregate quantity produced in kilowatts.	Mukden. Receipts in yen.	Mukden. Outlay in yen.	Changchun. Aggregate quantity produced in kilowatts.	Changchun. Receipts in yen.	Changchun. Outlay in yen.
	1907	1st Half	297,965	5,674	39,307						
		2nd Half	627,549	59,247	61,930						
	1908	1st Half	735,581	90,905	73,186	61,678	5,825	8,149			
		2nd Half	1,060,333	114,563	106,584	150,258	14,119	16,137			
	1909	1st Half	1,105,229	140,124	124,358	131,106	16,175	15,812			
		2nd Half	2,204,639	197,058	213,292	186,045	16,091	15,350	58,365	2,715	5,845
	1910	1st Half	2,541,135	235,656	207,521	167,869	14,964	15,762	220,841	21,642	18,679

Gas.—In order to meet the demand for gas for lighting, heating, and industrial purposes, the Company decided to establish gas works in Dairen with a productive power of 280,000 cubic feet. The installation, including all building construction and laying of pipes, has almost entirely been completed, and gas has been supplied since March, 1910, the total amount produced during the first half of that year being 7,176,400 cubic feet. The coal consumed in the production of the same was 625 English tons. In addition, 434 tons of coke, 8,786 gallons of tar, and 2,251 lbs. of sulphate of ammonia were produced as subsidiaries, thus averaging 10,483 cubic feet of gas, 14 cwt. of coke, and 14 gallons of tar per ton of coal.

MR. Z. NAKAMURA, PRESIDENT OF THE SOUTH MANCHURIA RAILWAY COMPANY.

Hotels.—The Yamato Hotel in Dairen was opened by the Company on August 1, 1908, after having been in course of preparation since the preceding April. But as a result of the largely increased tourist traffic, consequent upon the opening of the Company's steamer service between Dairen and Shanghai and the growing popularity of the Trans-Siberian route as the quickest journey between the Far East and Europe, the original hotel establishment was quickly found to be unable to meet the requirements. In order to obviate this difficulty, it was decided to begin at once with the construction of a new e tablishment on a large scale. The new hotel, in process of erection with other palatial public buildings around the Central Circle of the city, will, it is said, be one of the finest hotels in the Far East.

On March 21, 1908, the Yamato Hotel in Port Arthur was opened.

In 1907 the construction of a new hotel in Changchun was taken in hand, and at the same time the club-house belonging to the Company was converted into a temporary hotel to make up for the deficiency for the time being. This provisional hotel was thrown open on October 1, 1908. The new hotel was opened on February 1, 1910, on which day it give hospitality to the Imperial Chinese Prince Tsai Hsun (just returning from a tour in Europe) as its first guest.

The new hotel in Mukden, which forms part of the railway station, was opened on October 1. 1910.

The following figures represent the number of daily guests accommodated by the various Yamato Hotels (visitors who stayed more than one day being counted for as many days as they stayed):—

Working year.	Term.	Dairen.	Port Arthur.	Changchun.
1907	1st Half	338	—	—
	2nd Half	1,136	40	—
1908	1st Half	1,542	791	—
	2nd Half	2,014	505	1,144
1909	1st Half	3,337	886	877
	2nd Half	3,321	497	1,589
1910	1st Half	3,573	702	1,767

With a view to providing seaside resorts for residents and visitors during summer, it was decided by the Company to establish a pleasantly situated and well equippel hotel, on a point of the sea shore about 5 miles to the south-west of Dairen called Ho higaura (Star Beach), noted for its charming scenery and invigorating climate. In addition, t ere has been built a number of bungalows and villas, in both Japanese and European styles, which are let furnished at moderate rent. These accommodations were opened for use on August 8, 1910; and bathing, boating and sporting facilities have also been generally introduced.

This favourite resort can be reached in about 45 minutes by a direct tram car service operated from Dairen at intervals of about half an hour. Other arrangements to make the place attractive are now in rapid progress.

The Management of the Railway Area.—By virtue of the powers delegated to the Company by the Japanese Government to collect rates and fees from the residents in the railway area, as contribut ons toward the cost of management of the district, the

Company has published an agreement concerning residence in the Railway Area and regulations concerning the rates and fees. According to these regulations, the outlay for buildings and improvements of public utility within the railway area is borne by the Company, whilst the current expenses in connection therewith are paid out of the rates and fees from the residents, the Company making good any deficit.

The following figures show the amounts the Company has defrayed for the management of the Railway Area:—

Working year.	Term.	Deficit in yen.
1907	2nd Half.....	885
1908	1st Half.....	18,577
	2nd Half.....	21,982
1909	1st Half.....	36,818
	2nd Half.....	47,453
1910	1st Half.....	74,247

The Company's land management comprises the following branches:—

1.—Building and Management of Railway Towns.—The population and housing in the railway area is steadily on the increase. At the end of 1907 there were 8,647 houses and 29,524 residents, while at the end of 1910 there were 14,162 houses and 57,632 residents. Plans of building on up-to-date lines of town-planning have been prepared for the following fifteen places, viz., Wafangtien, Hsiungyuehcheng, Kaiping, Tashihchiao, Haicheng, Liaoyang, Mukden, Tiehling, Kaiyuan, Changtu, Shuangmiaotzu, Szupingchieh, Kungchuling, Fanchiatun and Changchun. In the following places the works taken in hand for the construction of roads and drains have already been completed to allow of their utilization in part, viz, Wafangtien, Tashihchiao, Liaoyang, Mukden, Tiehling, Kaiyuan, Szupingchieh, Kungchuling, and Changchun. Waterworks have been constructed at Wafangtien, Liaoyang, Tiehling, and Kungchuling on a scale sufficient to meet the present requirements. Plans for the construction of waterworks on a larger scale in Mukden and Changchun are still in course of preparation. Parks have been created in Dairen, Wafangtien, Tashihchiao, and Changchun; and agricultural experimental stations established in Dairen, where plants, flowers, and vegetables of various kinds are cultivated. Markets have been established in Liaoyang, Kungchuling, and Changchun; and in Kungchuling there is a slaughter-house under the management of the Company. Cemeteries and crematoriums have been established in Wafangtien, Hsiungyuehcheng, Tashihchiao, Liaoyang, Mukden, Tiehling, Kungchuling, and Changchun. The sanitary and fire-extinguishing arrangements also form part of this department.

2.—The Lease of the Land and Buildings within the Railway Area.—The total area of the land belonging to the Railway amounts to 55,638,000 tsubo (or about 46,000 acres), and all this land, together with the house property erected thereon, is offered by the Company on lease, with the exception of that occupied by the military and civil departments of the Kwantung Government. The rent per tsubo for building land is from 5 rin to 10 sen per month, while the rent per tsubo for agricultural purposes is from 1 rin to 3 sen per month (or at the rate of from £1 10s. od. to £45 per acre per annum). The amount of rent is fixed according to the situation and surroundings.

The following is the proportion of the Railway Area already rented:—

Working year.	Term.	Area.	Rent.
1907	1st Half...	7,420,000 tsubo (including 51,700 tsubo of building land).	24,205 yen
1910	1st Half...	15,317,490 tsubo (including 414,986 tsubo of building land).	66,000 yen

The buildings rented were as follows:—

Working year.	Term.	Number.	Rent.
1907	1st Half.....	391 (embracing 8,790 tsubo of building land).	6,185 yen
1910	1st Half.....	445 (embracing 9,776 tsubo of building land).	11,720 yen

The above figures show the steady development of the Railway Area.

DR. B. MATSUDA, M. I. M. E., CHIEF ENGINEER, FUSHUN COLLIERY

NOTE—1 tsubo is about 36 square feet, 1,224 "tsubo" is qual to 1 acre; 10 rin make 1 sen; and 2 sen are equivalent to 1 cent in American money and 1 halfpenny in English money.

3.—Hospitals.—Before coming under the management of the Company there existed in Dairen a central military hospital, as well as branch hospitals or stations in Wafangtien, Tashihchiao, Liaoyang, Mukden, Tiehling, Kungchuling, Chienchinchai, Tsaohokou, and Antung, all of which were for military purposes. After the acquisition of the hospitals, the Company made special efforts to expedite the completion of the Hospital Department, with the result that there are now central hospitals in Dairen and Chienchinchai (Fushun), with branch hospitals in Wafangtien, Tashihchiao, Liaoyang, Mukden, Tiehling, Kungchuling, and Changchun, and branch stations in Changtu, Chiaotou, Penchihu, Tsaohokou, Chikuanshan, and Antung, and medical stations in Hsiungyuehcheng, Kaiyuan, Szupingchieh, Haicheng, Shihchiaotzu, and Yentai. The treatment in these institutions is not confined to the officer and employees of the Company, but is extended alike to all the residents. Above all, the hospital in Dairen has been made a central institute, comprising the following 9 departments, viz., Interclinique, Surgery, Rhino-laryngo-otology, Dentistry, Dermatology, Ginecology and Tocology, Ophthalmology, Kinderclinique and Bacteriology. The hospital has beds for about 150 patients which are almost always occupied, besides a daily consultation attendance of about 700 persons.

The number of patients and the financial results of the working of the hospitals during the several half-years may be seen from the following table:—

Working year.	Term.	In-door patients.	Out-door Patients.	Receipts in yen.	Outlay in yen.
1907	1st Half	10,526	117,852	2,880	66,469
	2nd Half	20,878	112,985	38,472	119,003
1908	1st Half	42,561	200,822	73,227	126,899
	2nd Half	44,785	167,795	72,291	123,850
1909	1st Half	58,428	253,456	94,690	145,154
	2nd Half	59,878	213,560	89,577	183,072
1910	1st Half	79,680	352,351	123,992	233,047

NOTE.—The above table does not include the figures of the Fushun Colliery Hospital.

4.—Education.—The Company has established primary schools at Wafangtien, Tashihchiao, Liaoyang, Mukden, Changtu, Kungchuling, Changchun, and Fushun, and branch schools at Szupingchieh, Haicheng, Chiaotou, Chikuanshan, Hsiungyuehcheng, Penchihu, and Tsaohokou. There are no schools established by the Company up to the present time at Tiehling, Antung, and Yingkou, but the children in these places are, by special arrangement, attending Japanese schools outside the railway area. In July, 1909, a public school for Chinese children was established at Kaiping, and special classes for the education of Chinese children have recently been attached to the schools at Liaoyang and Hsiungyuehcheng. At most of the above schools continuation classes for technical and industrial education has been instituted. Dormitories

SOUTH MANCHURIA RAILWAY—VIEWS OF YARDS AT DAIREN

SOUTH MANCHURIA RAILWAY—AMERICAN EXCAVATOR AT WORK

have also been added at many of these places. Libraries, playgrounds, and other facilities that are calculated to promote general education have been introduced at several places along the railway line.

The following figures show the increase of school children in the railway area:—

Period.	Number attending School.
At the end of 1907	256
,, March, 1909	919
,, March, 1910	970
,, September, 1910	1,380

Experimental Laboratories.—There are two laboratories under the management of the Company: the Central Laboratory and the Geological Laboratory. The Central Laboratory was formerly under the control of the Kwantung Government, and was taken over by the Company on May 1, 1910. It is intended principally to conduct industrial and sanitary experiments and investigations. The Geological Laboratory originally belonged to the Mining Department of the Company, but was created into an independent institution under the control of the Company on May 1, 1910. This laboratory has charge of the geological investigations in the whole of Manchuria.

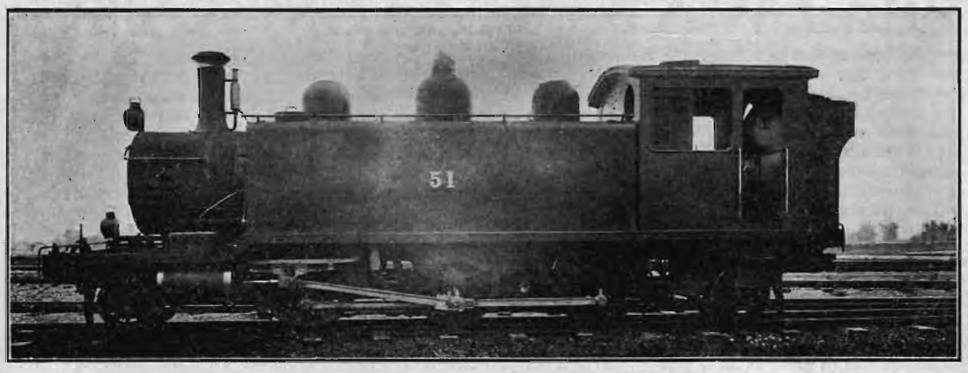
Financial Statistics.—The following gives the Company's capital expenditure up to September 30, 1910:—

Railway	46,970,237
Electricity	3,390,707
Gas	705,160
Harbour and Wharves	5,320,238
Mines	6,830,286
Hotels	804,309
Land Improvements	5,696,675
Buildings	8,564,698
Total	78,282,310

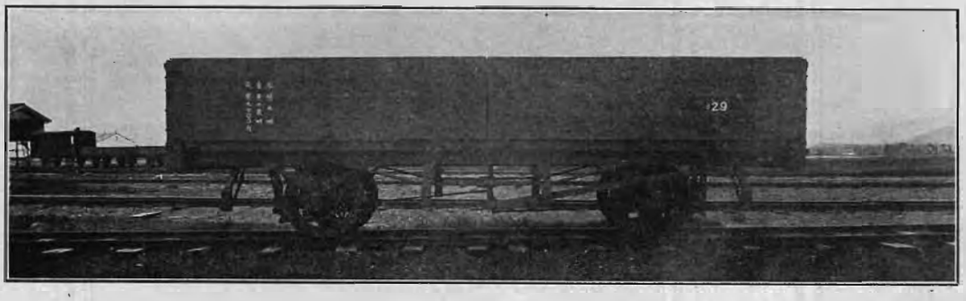
The following is the Company's aggregate receipts and expenditure in yen for the working half years up to September 30, 1910.

Working year.	Term.	Receipts.	Expenditure.	Net Profit.
1907	1st Half	5,002.459	4,073,863	928,496
	2nd Half	7,540,657	6,452,668	1,087,989
1908	1st Half	6,959,342	6,187,549	771,793
	2nd Half	10,656,340	9,314,553	1,341,787
1909	1st Half	9,892,575	8,206,709	1,685,866
	2nd Half	13,221,358	9,135,525	4,085,833
1910	1st Half	9,411,241	8,788,248	632,993

FUSHUN COAL MINES: ELEMENTARY SCHOOL HOUSE AT CHIEN- CHIN-CHAI



LOCOMOTIVE (2-6-2) BUILT BY THE OSAKA KISHA SEIZO KAISHA FOR THE IMPERIAL TAIWAN RAILWAYS. GROSS WEIGHT 48 TONS



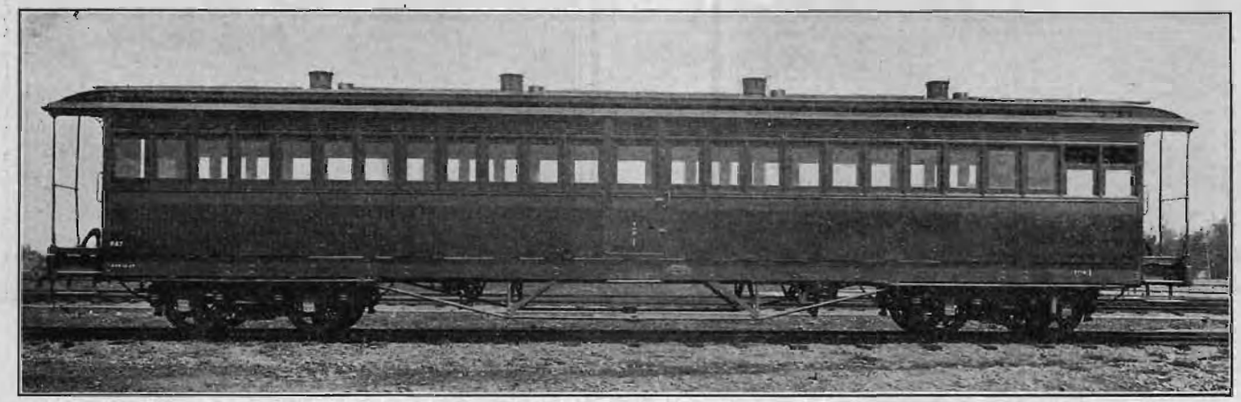
FREIGHT CAR BUILT BY THE OSAKA KISHA SEIZO KAISHA. WEIGHT 12 TONS

nacity of Governor Liu Ming Chuan in battling with the prejudice at Peking against the innovation. The work was continued until 1893 at which time the line was completed and opened to traffic for a distance of 62 miles connecting Hsinchu with the Northern Port of Keelung. At this period of railway construction the Peking government issued an order to suspend further operations, the proposal to improve the Port of Keelung was not encouraged and trade fell off. In fact all the collieries were closed and, with the exception of passenger traffic, there was little activity in transportation.

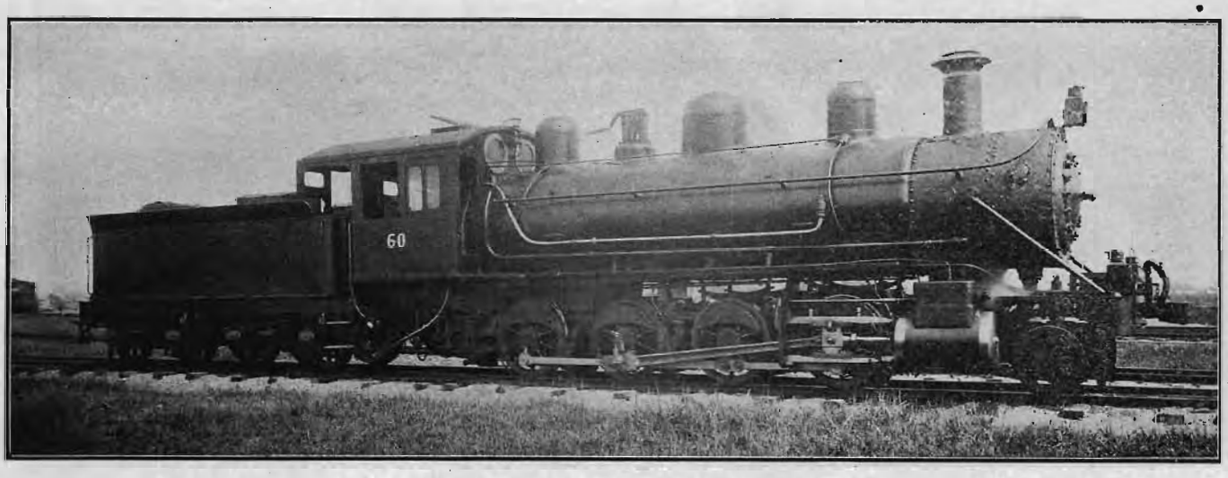
When the Japanese assumed control of the island after the Chino-Japanese War they found the 62 miles of railway built by the Chinese Government in operation joining Keelung and Shinchiki. This line represented a cost to the Chinese administration of approximately 1,295,960 taels, and through lack of encouragement by the Peking Government it had not been properly maintained, although Governor Liu Ming Chuan, the progressive executive, used every influence to extend the line and keep it in good shape. His resignation in 1891 concluded all progress in any direction and when the Japanese assumed control in 1895 and decided to extend the railway it became necessary to reconstruct the 62 miles to which they fell heir.

After the Japanese occupation of the Island in 1895, a special survey was made for the extension of the existing railways under the supervision of the Civil Affairs Department which controlled for three years the Tem-

(Continued on page 127)



IMPERIAL TAIWAN RAILWAYS.—PASSENGER COACH BUILT AT THE DAIHOKU SHOPS



IMPERIAL TAIWAN RAILWAYS.—LOCOMOTIVE (2-8-0) BUILT BY THE BALDWIN LOCOMOTIVE WORKS.—GROSS WEIGHT 73 TONS

TANGSHAN ENGINEERING COLLEGE

The College, Tangshan Engineering College, was established by the Imperial Chinese Railways in 1905. In May of that year instructions were received by the Directors of the Railways from Their Excellencies Yuan Shih-kai and Hu Yen-mei, Directors-General of Imperial Chinese Railways, to draw up plans for an engineering college to be established at some point along the railway line where Chinese engineers were to be trained for service in the Railways. In August of the same year Tangshan, a town on the Railway line situated half way between Tientsin and Shanhaikwan, was decided upon as the place where the College was to be built. The presence of the railway workshops in Tangshan offered unusual opportunities to the students for practice in connection with their engineering education. Building operations were begun in October providing dormitories for one hundred and sixty students, a dining hall, two class room buildings, a swimming bath, and residences for the president and the professors. These buildings were completed and ready for the reception of students in August, 1906. For the first class students with a working knowledge of English, elementary mathematics, and Chinese literature, history and geography were examined in Hongkong, Shanghai and Tientsin in December and 120 were chosen. Regular class work, however, did not begin until March, 1907, when the students were divided in two sections of sixty members each.

The two class room buildings originally provided soon proved insufficient for the accommodation of the several departments, and a larger lecture hall containing drawing offices, laboratories and lecture theaters was further added. This building, now known as East Hall, was begun in May, 1907, and was ready for occupation at the end of the year. At the same time a hospital for the special care of sick students was built on a lot adjoining the college compound. Beside the hospital was also built a house for the medical officer.

DR. S. S. YOUNG, A. B., A. M., PRESIDENT OF THE TANGSHAN ENGINEERING COLLEGE.

During the first two years of the College's existence, the classes were handicapped by lack of equipment for practical work, but greater emphasis has since been laid on practical laboratory work in connection with lectures and text-book instruction, and in 1909 additional apparatus and equipment were acquired, which have been sufficient to satisfy the requirements of the present classes. The physical laboratory has been extended as well as the chemical laboratory, and new quarters are being provided for the latter in the new west hall, which is now in course of construction and which will be ready for occupation after the summer holidays. To provide the advanced classes with more room for practical work, a large workshop and engineering laboratories building is also being constructed and will be fully equipped by the time the students return to their classes in the fall. In this building a mechanical laboratory, a hydraulics laboratory, workshops, calorimetry room, power house boiler house, electrical engineering laboratory, photometric room and heat laboratory have been provided.

The original plan of the Directors-General of Imperial Chinese Railways was to train Chinese engineers for railway construction work only, and a course in civil engineering was offered in the college. When the Imperial Chinese Railways became the Imperial Railways of North China and came under the control of the Imperial Ministry of Posts and Communications, the College also came under direct control of the Ministry, and this year courses in Mechanical and Electrical Engineering are being added to train men in these branches of engineering as well.

In order to secure for the College Department students thoroughly grounded in the fundamental subjects, a preparatory department has been added to the college, offering a three year course. Accommodations for 150 students have been provided for this department in a new dormitory, and new students will be admitted after the summer vacation.

The college aims to offer to students the highest engineering education obtainable in the country and towards this end no pains and expense have been spared in making necessary improvements and extensions. Students graduating from the collegiate department will be employed by the Ministry of Posts and Communications and drafted into the various Government railways to serve as cadets for a term of two or three years before they are given definite appointments on the engineering staff. The first railway engineering class will graduate in July, 1911.

Entrance Requirements.—Candidates for admission to the first year of the preparatory department must have attained to the age of thirteen years. They must submit to examinations in English showing a study of the language for at least three years, and in arithmetic in English, and must show a fair knowledge of the Chinese language and literature, history and geography. Successful candidates must also pass a physical examination before they are admitted to the college.

To be admitted as regular students in the freshman class the candidates must have attained to the age of sixteen years, must have passed a medical examination and examinations in the following subjects:

Elementary Algebra through quadratic equations; *plane and solid geometry:* the ordinary definitions, demonstrations and constructions; *elementary physics:* a knowledge of the fundamental principles of physics; *elementary chemistry:* a knowledge of the chemistry of the drafting instruments; *Mechanical drawing:* a knowledge of the use of drafting instruments; *English composition and conversation:* proficiency in grammar, ability to speak, read, write and translate English correctly; *history and geography*: the candidate should show a general knowledge of world history and of the geography of the world; *Chinese literature:* familiarity with the literature in the Chinese language and ability to write an essay of average length in correct style.

The students who have completed the course offered in the preparatory department are admitted into the freshman class without undergoing the regular entrance examinations.

Advanced Standing.—Candidates may be admitted to advanced standing in any class by showing that they have completed all the subjects required in the previous year or years of the preparatory or collegiate course which they desire to enter. Candidates for advanced standing may enter the regular final examinations in June of the class which they wish to join.

Time and place of examinations.—This year entrance examinations will be held during the summer vacation in July or August in Canton or HongKong, Shanghai, and Tientsin, at such time and in such places as will be announced in the local newspapers when the time approaches for the examinations.

THE PRESIDENT'S HOUSE

ONE OF THE RESIDENCES OF THE PROFESSORS

ENGINEERING LABORATORIES AND WORKSHOPS CONTAINING MECHANICAL AND HYDRAULIC LABORATORIES, WOOD AND METAL WORKSHOPS, POWER HOUSE, HEAT ENGINE LABORATORY, ELECTRICAL TESTING LABORATORY AND BOILER HOUSE AND BATTERY ROOM

EAST HALL, THE UPPER FLOOR OF WHICH IS OCCUPIED BY SPACIOUS DRAWING OFFICES.—THE ROOMS OF THE LOWER FLOOR ARE USED AS GENERAL LECTURE ROOMS

Plans of Instruction.—In all engineering colleges difficulties arise in justly proportioning the theoretical and practical parts of the tuition. It must at the outset be realized that the practical work done in a college is in no sense to be regarded as replacing that which executed by a pupil in works or offices. It is only introductory thereto, and enables the student on leaving the college to appreciate the details of his practical work so that he finally becomes efficient in this much sooner than he would without such preparation. There will therefore be found in the curriculum certain periods alloted to workshop practice, drawing office work, and field work of amount sufficient to thoroughly exemplify the theoretical training but not adequate in either time or subject to fully qualify the student who completes the course to independently undertake any piece of work. The environment of works and offices is quite different from that of a college and the trained student must become acquainted with the values and proportions of things in actual practice before he can be considered a real engineer.

With regard to the theoretical courses, engineering must be regarded as the application of physical science. Physical science depends on two things: (1) mathematics and (2) experiment. The mathematical training proceeds continuously from the first year of the preparatory course up to the sophomore year, after which it does not appear as a separate subject, but is specialized in the various technical subjects. It is not so essential that an engineer shall be a first class mathematician as that he shall have a sound knowledge of the principles and applications of mathematics to simple problems, including those which involve continuous change in time and space.

Experimental science is gradually developed from the very beginning of the courses. Chemistry, physics, and geology are studied in lecture room and laboratory up to the Junior year when they give way to their applications of engineering practice.

The technical work is gradually introduced, displacing one by one the mathematical and purely scientific subjects upon which it wholly depends and is after the Sophomore year specialized in three directions according to the type of engineering training required by the student. The three types are: (1) civil, (2) mechanical and (3) electrical. It is not possible to rigidly separate the types and in many subjects the lectures, laboratories and drawing office work overlap and are common to two of the types, but wherever there are distinct subjects to be studied special courses of lectures are arranged.

In the last year of the student's course he is required to write a thesis, i.e., a special study of or attempt to solve a certain engineering problem. The exact nature of the work to be done will be decided by the respective professors, some choice, however, being allowed to the student. The execution of this thesis will as far as possible involve the application of all the theoretical and practical knowledge the students acquired.

In connection with all the subjects of the courses it should be particularly observed that the subjects are only separated for convenience, and are in actual fact all dependent on each other, forming an organic whole and not a number of rigidly distinct parts.

Accommodations.—The buildings of the College may be divided into two classes: (1) educational and (2) residential. The educational buildings are: The east hall, the west hall, the central lecture rooms and the engineering laboratory building.

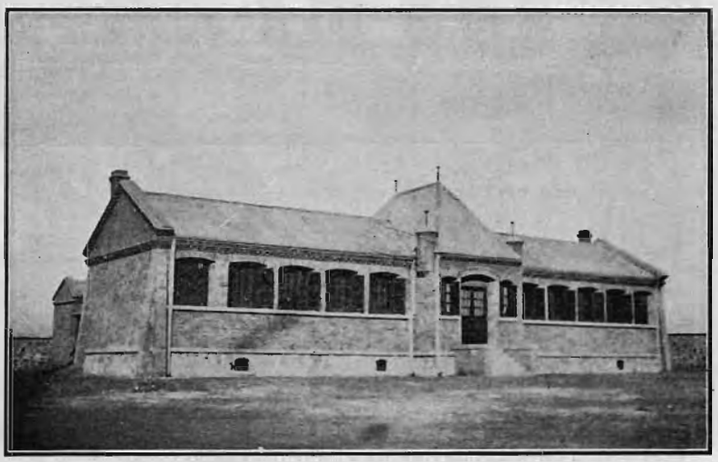
East Hall is a two-storied building, 130′ by 60′, running north and south and facing to the west. It was erected in 1907 and includes on the ground floor three lecture rooms and physical laboratory. This floor is occupied by the physical and mathematical departments and there are three offices for professors and instructors. There is also a room for the storing of Physical apparatus adjoining the Physical laboratory. On the first floor there are two large drawing offices and a lecture theater. This floor is occupied by the mechanical engineering department and contains an office for the professor. There is also a dark room for photoprinting and another similar room on the mezzanine floor.

West Hall is a two storied building, 129′ 6 by 76′ 0″, symmetrically placed with and facing the East Hall. It was erected in the spring of 1910, and includes on the ground floor four large lecture theaters, a store room for surveying instruments and two offices. This floor is partly occupied by the civil engineering department. The upper floor includes two chemical laboratories, a geological laboratory and lecture room, two lecture rooms, a chemical store room, a balance room and office for the professor of chemistry and geology.

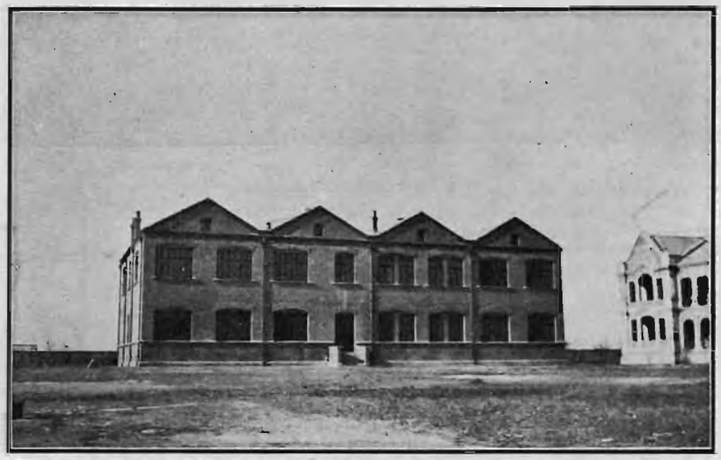
The central lecture rooms are two single storied buildings, each containing two lecture rooms. These buildings are now being occupied by the preparatory department.

The engineering laboratory building is a long single storied building about 220′ by 70′ running east and west. It is divided by cross walls into seven bays. Commencing from the east end the first bay includes electrical engineering laboratory. South of this bay is a coal store and boiler house which latter is continued across the end of the second bay. The second bay is subdivided into three parts, viz., engine room, photometric room, and electrical instruments testing room. The third, fourth and fifth bays communicate by arched openings and form heat engines laboratory and workshops, with sections for the storing of instruments and a room for calorimetry. The sixth and seventh bays form the hydraulics and mechanical laboratories. The equipment of these laboratories is described below.

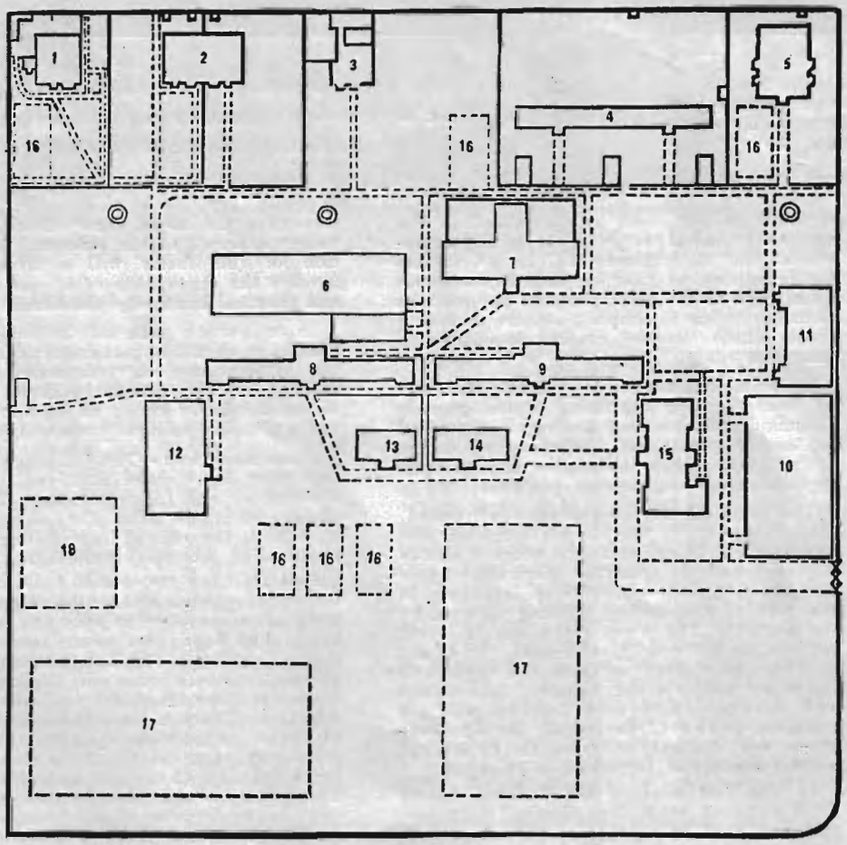
The residential buildings are: (1) east dormitory (2) west dormitory, (3) new dormitory, (4) hospital and dispensary, (5) dining hall and library, officers' residences.



THE COLLEGE HOSPITAL CONTAINING FOUR WARDS, A DISPENSARY AND DOCTORS' CONSULTING ROOM



WEST HALL HOUSING THE CIVIL ENGINEERING, PHYSICAL AND CHEMICAL DEPARTMENTS



1, 2, 3, 4 } Staff
Residences

5 President's House

6 Engineering Laboratory Building

7 Dining Hall

8, 9, 10 } Dormitories

11 Swimming Bath

12 West Hall

13 Lecture Rooms

14 Lecture Rooms

15 East Hall

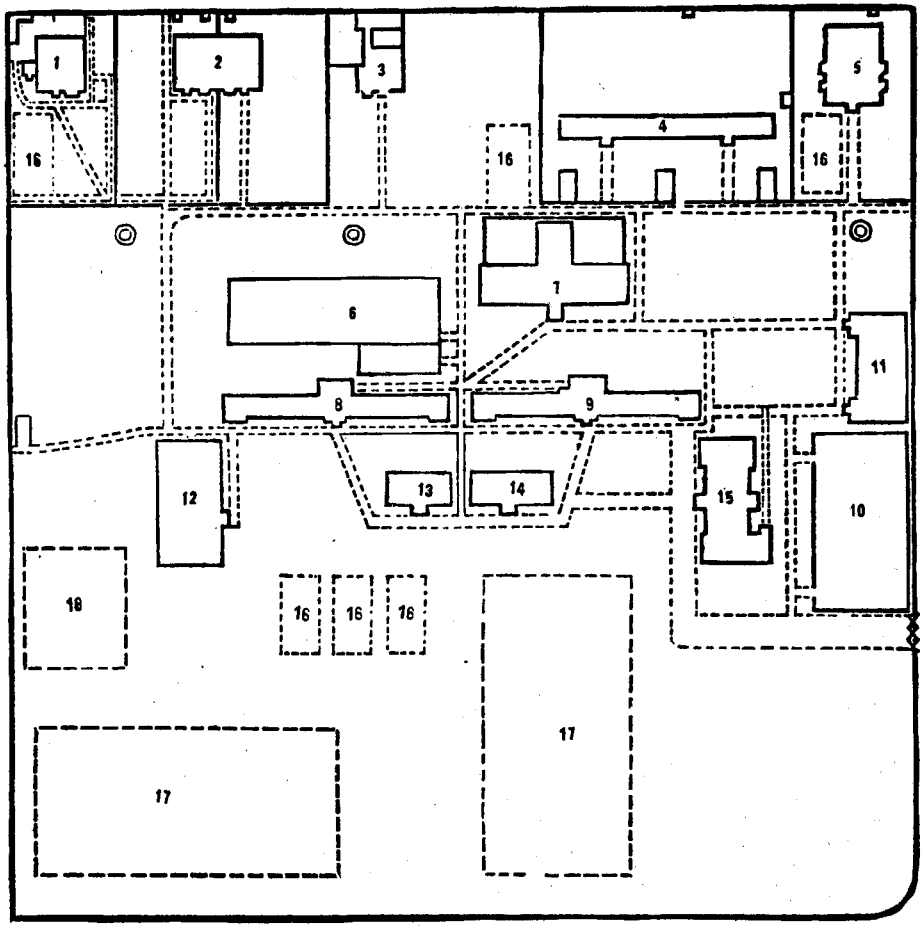
16 Tennis Courts

17 Football Fields

18 Garden

PLAN OF THE COLLEGE GROUNDS

Repeat of Map (from bitmap scan)



1, 2, 3, 4 } Staff / Residences

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18 Garden

PLAN OF THE COLLEGE GROUNDS

cinder track a quarter of a mile long, enclosing a football field, tennis court, cricket pitch and spaces for jumps, vaults and weight throwing.

Equipment.—The equipment of the laboratories and workshops of the college is of as varied and extensive a character as possible. It has not so much been desired to possess large machines of impressive appearance as to obtain the greatest possible variety in the representative types. The apparatus can be briefly classified as follows: (1) east engines laboratory; (2) mechanical and hydraulic laboratory; (3) electrical laboratory; (4) engineering workshop; (5) physical laboratory; (6) chemical and geological laboratories; (7) demonstration apparatus for civil engineering, including surveying.

The main feature of the heat engines laboratory is the 40 H. P. generator set. This consists of a double expansion condensing Howden engine (marine double) direct coupled to Cromp on four-pole D. C. dynamo. The steam for the boiler is produced in a Babcock and Wilcox water tube boiler fitted with Green's Fuel Economiser. A petrol motor pump set supplies the water for the engine room, drawing the same from a large well in the center of the north end of the college enclosure. The water is stored in a large underground tank extending between the engine room and hydraulic laboratory, which latter room is also supplied from it. The lighting of the buildings and the power for the motors attached to the various machines is obtained from the generator set mentioned above. The main switchboard is divided into three panels serving respectively the generator and battery control, lighting and power, and a small generator set. A battery of accumulators serves for the maintenance of the current during the night. The heat engines laboratory also contains indicators and other apparatus for experimenting with the machines, and on applied heat in general.

The mechanical and hydraulics laboratory includes several interesting items. There is a 30-ton Riehle automatic testing machine, a 2-ton Bailey wire and gauge tester, a 2-ton Avery bending tester, Avery impact tester, a small torsion tester, and also an oscillating torsion tester for experiments on fatigue of metals. The bench apparatus is chiefly on the Cusson's steel tripod and block system and aims principally at developing a knowledge of stress and strain, statics, friction and especially the dynamics of rolling stock and rotating bodies. In the hydraulic section there are experimental tanks, pressure pumps, hydraulic press, accumulator, centrifugal pump, Vortex turbine, Pelton wheel, and an experimental main with meters and gauges.

The electrical engineering laboratory is well provided with galvanometers of various types, resistance boxes and the usual electrical instruments as well as motors for testing and demonstration.

The engineering workshops include wood lathes, screw-cutting lathes, drilling machines, small shaping machine, and benches for metal and wood working A forge and cupola are provided in the foundry.

The physical laboratory is well provided with balances and full equipment for experiments in the properties of matter, heat, light, sound, magnetism and electricity. A spectroscope, photometric apparatus and optical bench should specially be noted. There is a special room for photometry including a pentane standard lamp in the engineering laboratory building.

The chemical laboratory is supplied with apparatus and materials for elementary experiments and volumetric and gravimetric analysis of an ordinary type. A geological laboratory including several hundred specimens of rocks, minerals and fossils is attached, and all necessary instruments are provided for their examination, including microscope, goniometer, etc.

The apparatus in the civil engineering department includes theodolites and telescopic levels, tacheometer, sextants, plane tables of different makes, sufficient to equip a railway recounaissance party for a large survey.

Models of constructional plants for lecture purposes should also be mentioned in this connection.

Division of the college year.—The college year begins in August and consists of about forty weeks, which are divided into four quarters of nine weeks each of class-room work. The last week of each quarter is devoted to quarterly examinations.

There is a summer vacation of forty days and a New Year vacation of thirty days, besides holidays on the occasion of the dragon boat festival, the mid-autumn-festival, anniversary of the birthday of Confucius, and the winter solstice. About three weeks of the summer vacation are devoted to summer practice in railroad construction, machine work or electrical work. Whenever practicable part of the New Year vacation are also given to practical work.

Expenses.—In the preparatory department the fee for tuition is twenty four dollars per year, payable semi-annually in advance before the students are admitted to classes. The fee for board and room is twelve taels per quarter, payable quarterly in advance. Physical culture and military uniforms will be supplied by the college at cost price.

In the collegiate department students admitted from the preparatory department are exempted from the payment of tuition and board fees. Intrants from other schools pay a tuition fee of four taels, and board and room fee of four taels each month during the first quarter of their freshman year, these fees being payable for three months in advance. They are exempted from payment of tuition fee after the first quarterly examination in which they shall have attained to a general average of fifty per cent. and are further exempted from payment of board and room fee after the second quarterly examination in which they shall have passed above a general average of fifty per cent. These students then become government scholars and are furnished tuition, board and room by the government free of charge. Books, stationery, and uniforms are, however, to be supplied by the students themselves.

A deposit of five dollars per course per half year is required of all students taking courses in physics and chemistry. They are charged for breakage of apparatus and for damages, for which deductions will be made from the deposit. Those whose breakages amount to over five dollars will be charged accordingly.

Examinations.—Written examinations as well as examinations in practical courses are held at the end of each quarter. A general average of fifty per cent. and at least thirty per cent. in every subject are required for a pass mark. No student failing to attain to this standard will be promoted to a higher class. The final marks for a college year are obtained by taking the average in every subject of the marks given in the four quarterly examinations.

There are at present in the college a total number of 170 students divided into 5 classes, 4 of the collegiate department and 1 of the preparatory department. The first class of 28 students will graduate from the college this summer and after graduation will be employed by the Board of Communications on the various railways under its control.

List of Professors and Officers for 1911.—Samuel S. Young, A. B. (California), A. M. (Columbia), Ltt. D. (Imperial Chinese Government), president; James A. Cormack, B. Sc., C. E. (Glasgow University), professor of mechanical engineering; David Thomas, B. E. (Sydney University), professor of chemistry and geology; Charles J. Adderley, B. A., B. A. I. (Trinity College, Dublin); professor of physics and civil engineering; Herbert Chatley, B. Sc. (London), professor of civil engineering; Frank A. Foster, B. S. (Worcester Institute of Technology), assistant professor of mechanical engineering; Fred C. Eaton, B. S. (Cornell), acting professor of mathematics; Alfred C. B. Fletcher, B. S. (California, acting professor of English; Luther McLean Jee, B. S. (California), A. M. (Harvard), professor of economics and history; Pond Mooar Jee, B. S., M. D. (California), medical officer and director of physical culture; Ho Hou wei, B. S. (Yale), A. M. (Pennsylvania), professor of mathematics; Tang Dien-san, M. A. (Chinese), professor of Chinese literature; Ch'en Ying-chung, M. A. (Chinese), reader in Chinese composition; Su Wen-ching, assistant in drawing.

Ch'en Hung-chi, head proctor and accountant; Chang Tseng-ching, general supervisor and secretary; Li Cho-chun, proctor; Wei Shang-chi, proctor; Hsu Shu-pei, storekeeper; Chin Cheng-chu, recorder; Chang Li-hsun, clerk; Lu Chung-lin, clerk.

THE PHILIPPINE SOAP INDUSTRY

That local soap manufacture has been neglected was largely due to the fact that foreign initiative was lacking. The importation of foreign soaps offered handsome returns and the advantages of industrial adventure in this department of industry in the islands did not prove of sufficient attraction.

Since American occupation, however, the demand for better quality of oap, formerly confined to foreigners and the better class of natives, increased by leaps and bounds. Importations of soaps increased yearly and especially in 1910 when the total importation was valued at ₱231,516 as against ₱136,348 in 1909

The Philippines offers the greatest natural inducements for the growth of this industry due to the availability of cocoanut oil, a most desirable ingredient, and the climate. But notwithstanding all the favorable conditions, the export of copra to Marseilles and the import of the foreign article continued until recently when the Philippine Soap Co. was organized with a capital of ₱100,000 for the purpose of developing this important industry. The officers of the company are Thomas J. Wolff, president; L. F. Goodale, vice-president; and J. Will amson, secretary-treasurer. Ramon Rius, a Spanish soap expert, has been engaged as manager.

President Wolff is also head of the Sanitary Steam Laundry Co. that has met with a large measure of success in building up a thriving business.

Manager Rius has been connected with the leading soap manufacturing concerns in Spain, France and Italy. He served his apprenticeship in Reus, Spain, studied all the different branches of manufacture in Marseilles and perfected his knowledge of the adaptation of the different oils and greases to the most economical means of producing the best returns in quality. After becoming conversant with French manufacture, he proceeded to Italy where he spent a number of years in study of Italian methods. In all Mr. Rius has had over 15 years' experience in different capacities up to the management of factories and is thoroughly conversant with the most approved modern methods of manufacture of all grades.

The new company has established itself in the building now occupied by the laundry but has arranged for a new site upon which a large reinforced concrete building is being constructed and will be occupied in a few months.

Machinery was installed early in June and the factory began operations June 15. Its capacity is 200,000 pounds a month and several units will be added as the demand increases. At the present time the entire output has been contracted for and new machinery to increase the capacity of the plant has been ordered.

It is the purpose of the company to cater to Far Eastern trade as soon as facilities are increased to take care of it. From present indications it will be some time before the local demand will be covered, but President Wolff proposes expanding until he has his share of Oriental business. He believes he can compete successfully with European and American products in point of quality and price in any market.

IMPERIAL TAIWAN RAILWAYS

Over thirty years ago in 1877, while China was bitterly opposing the introduction of the steam railway into her territory, there was a wide awake and progressive Governor in Formosa by the name of Ting who foresaw the advantages of the new means of travel, and urged upon Peking a program for the construction of railways. But the wise old mandarins at Peking refused to sanction the proposition and when the little Woosung line was torn up, and the Chinese were looking for some secluded spot to relegate the wreck, the Island of Formosa was chosen, and the materials were dumped there probably as an object lesson to the progressive Governor, and to emphasize the antiprogressive attitude of the Government,

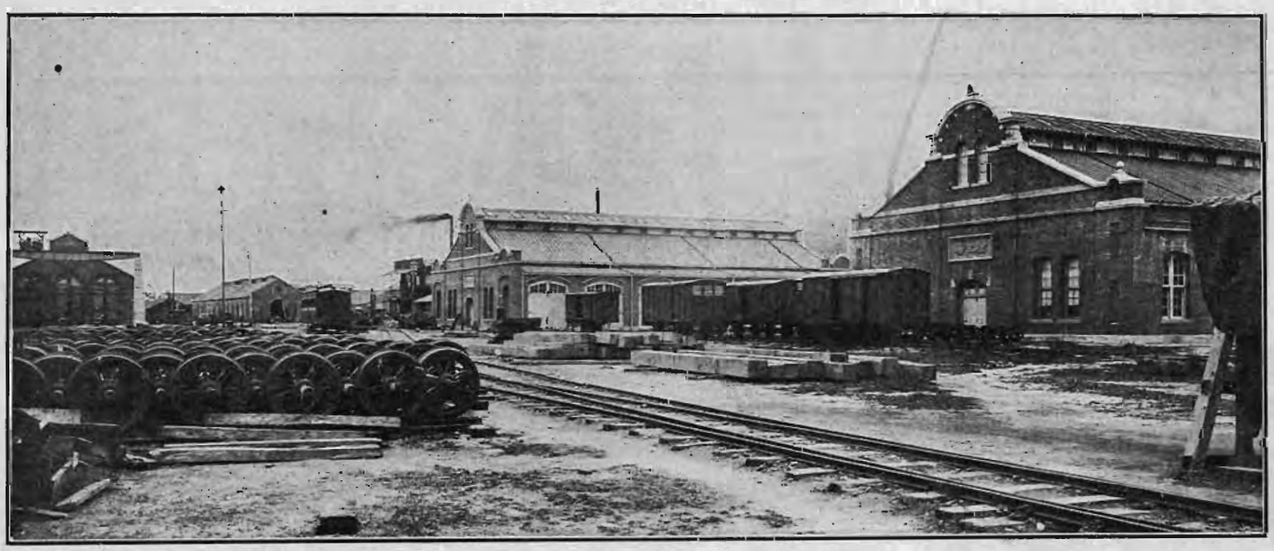
The removal of the capital of Formosa from Tainanfu on the coast to Taipeh on account of the danger from invasion served Governor Liu Ming Chuan, who had succeeded Ting, as an excuse for the construction of a railway connecting the capital with the coast. He managed to build twelve miles connecting Tuatutia and Saitingka, and this section was opened to traffic in 1889. Even this small section was evidence of the te-

MR. KATICHI UCHIDA

CHIEF OF CIVIL ADMINISTRATION AND DIRECTOR OF THE IMPERIAL TAIWAN RAILWAYS.

MR. SHIKANOSUKE NIIMOTO

CHIEF ENGINEER OF THE IMPERIAL TAIWAN RAILWAYS.



THE EXTENSIVE RAILWAY SHOPS AT DAIHOKU ON THE IMPERIAL TAIWAN RAILWAYS

RURUN STATION ON THE IMPERIAL TAIWAN RAILWAYS.

RAILWAY HOTEL AT DAIHOKU IMPERIAL TAIWAN RAILWAYS.

DAIHOKU STATION ON THE IMPERIAL TAIWAN RAILWAYS.

DAICHU STATION LOCATED IN THE CENTER OF FORMOSA, 118 MILES FROM KURUN ON THE IMPERIAL TAIWAN RAILWAYS.

IMPERIAL TAIWAN RAILWAYS

(Continued from page 124.)

porary Railway Bureau. In 1899 the present Formosan Government Railway Department was organized, and the program for the construction of the trans insular line entered into. The estimated expenditure for the new line was Y28,800,000 spread out over a period of ten years. This was included in the general development budget, and the funds raised formed part of the Imperial Japanese Government Taiwan Public Works Loan which was issued for the purpose of carrying out various works necessary for the development of the island and the construction of the railways. This loan, which was to be issued as the funds were required and was not to exceed Y73,500,000, reached at the end of March 1909 the sum of Y34,508,535, of which Y28,800,000 was applied to railway construction and improvements. Of this sum at least Y300,000 were expended in constructing modern railway hotels along the line.

The actual cost of construction was much lower than the estimate, owing to the fall of wages and other favorable conditions and a slight modification of the original route.

The main lines and branches comprise 18 tunnels aggregating 4 miles 56 chains, 28 bridges of over 300 feet long, totalling 6 miles 25 chains. Much of the route lay in mountainous country presenting many difficult engineering problems.

The estimate of Y28,800,000 was reduced Y1,250,000, besides the Y300,000 for hotel construction. This gives a rough average cost of Y100,000 ($49,000) per mile for the 271 miles of narrow gauge line.

The program initiated in August 1899 was to have covered a period of ten years, but such satisfactory progress was made that the main trunk line between Shinchiku and Taokow, a distance of 246.8 miles, was completed by April 1908, together with a branch line between Daitoku and Tamsui, 13.7 miles, and another connecting Taokan with Kukiyodo 10.6 miles, a grand total of 271 3 miles.

On October 24th. 1908, the line was officially opened by H. I. H. Prince Kanin amid great enthusiasm.

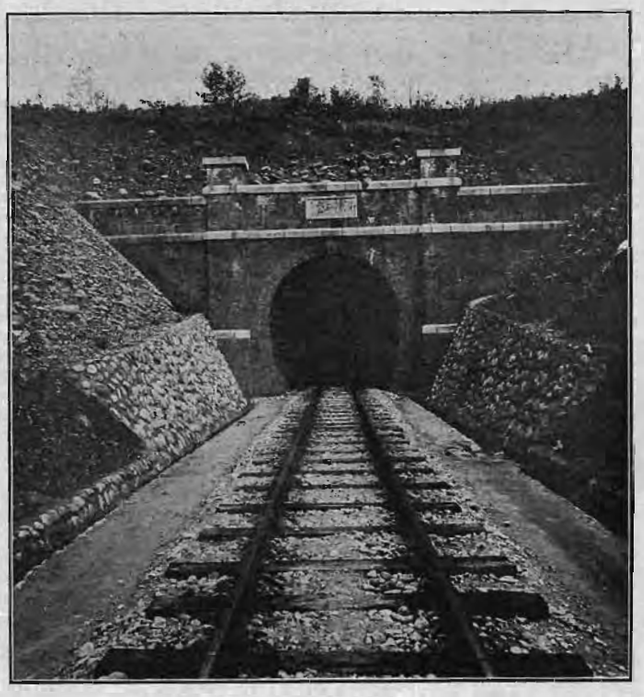
The results for the first year of operation, 1908-09, were most satisfactory and gratifying to the Japanese government who guaranteed the bonds to the extent of $12,901,686 for the roads.

The report showed the general affairs in good condition with a balance of $653,695 (gold) for just a little over a year's operation. Total mileage, 271.3; value of rolling stock, $1,319,670 consisting of 54 engines, of which eight are American made, 112 carriages and 826 wagons. Revenue: Passengers, $615,119; freight, $755,867; miscellaneous receipts $4,424; total revenue, $1,375,410. Expenditures, $721,715; excess of revenue $653,695. The number of passengers carried during the year was 2,691,034, and the freight carried amounted to 711,930 tons. Persons employed on the line, 2,756; salaries and wages paid during the year, $281,840.

By the end of March 1910, the total revenue amounted to Y3,360,000 and the expenditures to Y1,550,000 leaving a profit of Y1,810.000. The earnings per day per mile averaged Y34.00 against an expenditure of Y15.00. The equipment has been increased to 63 locomotives, 124 passenger coaches and 986 freight cars.

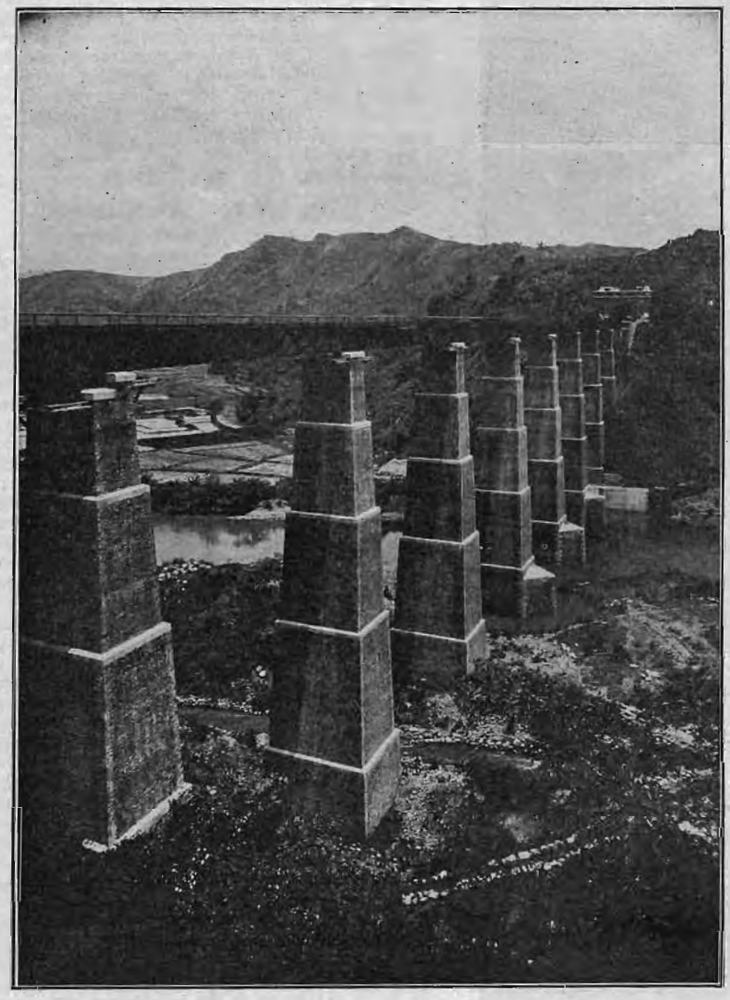
Plans have been made and adopted for the extension of the railway system by two branches, 60 and 41 miles, respectively, in the eastern and southern parts of Formosa.

The Taito line, 60 miles in length, will run along the southeastern coast, following the river, and will pass through what is known as savage territory. The road will connect Taito and Karenko, important coast towns, having populations of 4,000 and 2,500 respectively. A public tramway now covers about a third of the distance from Karenko to Taito. The estimated cost of this line is $2,119,986, and the work was started in January, 1910.



NO. 9 TUNNEL IMPERIAL TAIWAN RAILWAYS—LENGTH 4162 FEET—LOCATED 106 MILES FROM KURUN—COMPLETED, MARCH 1908

NO. 2 TUNNEL, IMPERIAL TAIWAN RAILWAYS—98 MILES FROM KURUN—LENGTH 2378 FEET—COMPLETED AUGUST, 1907



1st BRIDGE AND TUNNEL AT TALAN KEI ON THE IMPERIAL TAIWAN RAILWAYS, FORMOSA

TAKAO STATION ON THE IMPERIAL TAIWAN RAILWAYS

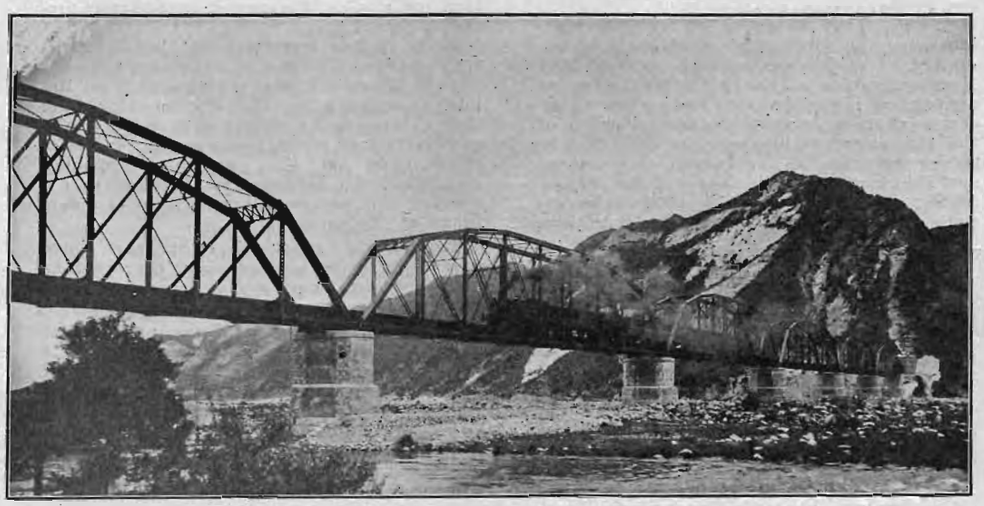
TAINAN STATION ON THE IMPERIAL TAIWAN RAILWAYS

The Arisan Line, 41 miles in length, penetrates into the savage territory. It starts from Kagi, where a bamboo-pulp factory is located and taps the camphor-tree district at Mount Ari. Here are also very valuable forests, and the road is destined to become an important tributary to the main line. The estimated expenditure for the Arisan branch is $1,326,672. Work was to be commenced in April, 1910. The gauge for both lines will be 3.06 feet.

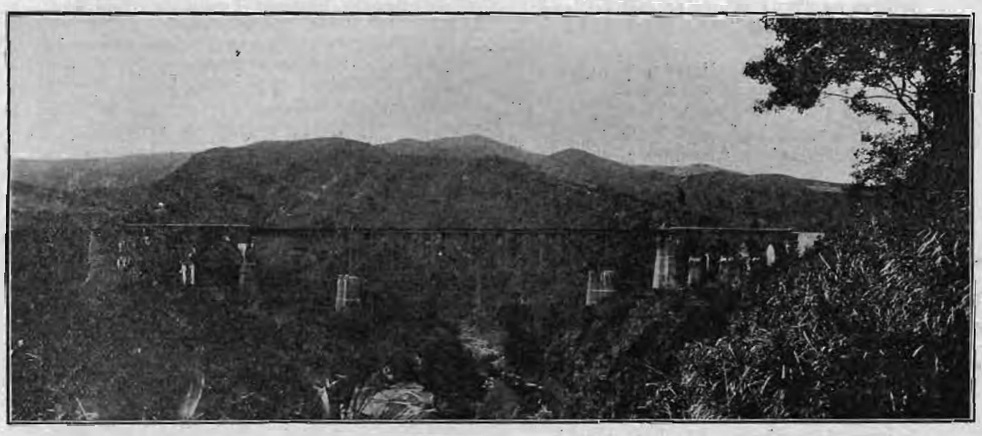
Besides the Imperial Taiwan Railways, Formosa has 298 miles of tramway in operation and 100 miles of tramways under construction. While the tramways are mostly owned by the big sugar companies, there are 45 miles of tramways open to the public and 44 miles of public tramways under construction.

Some idea of the magnitude of the sugar industry in Formosa may be gathered from the fact that the tramways over which are carried raw materials (sugar cane) comprise 308 miles.

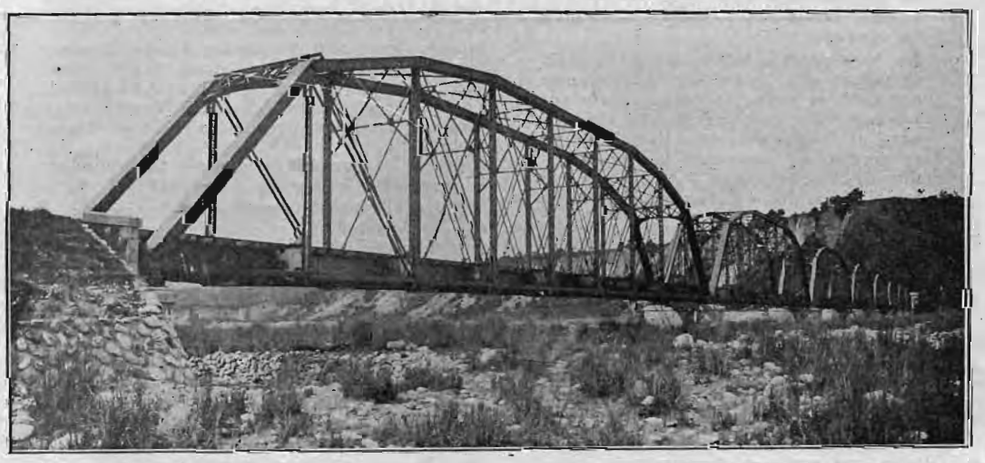
The railway hotel at Daihoku situated directly opposite and convenient to the station is one of the attractions of railway travel. The hotel site proper covers 620 tsubo and including the grounds, 3,000 tsubo. The building is three storey, built of brick and stone, and equipped with every modern convenience. Foreigners traveling through Formosa have found every comfort here at this hostelry. The first floor comprises office, telephone booth, assembly room, tap room, billiard room, smoking and reading rooms, one large and one small dining room, barber shop, lavatories, etc. On the second floor are large and small reception rooms, bedrooms, bath rooms, lavatory, etc. The third floor is divided into bedrooms with baths and a foreign and a Japanese reception room. Outside buildings are provided for recreation, ice plant, engine rooms, servants' quarters, kitchen, stable, etc.



TAIAN KEI BRIDGE SITUATED 102 MILES AND 64 CHAINS FROM KEELUNG, ON THE IMPERIAL TAIWAN RAILWAYS.—LENGTH 1663 FEET OF EIGHT SPANS OF 200 FEET EACH—COMPLETED, FEBRUARY, 1908.



SECOND BRIDGE OVER THE NAISHIWA ON THE IMPERIAL TAIWAN RAILWAYS.



DAIKUSUI RAILWAY BRIDGE, IMPERIAL TAIWAN RAILWAYS.

The results for the various working years are as follows:

Year.	Mileage of Open Lines.	Rolling-stock.			Number of Passengers carried.		Quantity of Goods carried.	
		Engine Cars.	Passenger Carriages.	Freight Waggons.	Number.	Fares	Quantity.	Freights.
	M. C.					Yen.	Ton.	Yen.
1900-01	89.04	16	35	164	453,085	299,107	110,173	169,749
1901-02	129.31	19	36	219	792,871	332,578	117,027	183,138
1902-03	154.70	30	45	269	998,467	419,134	234,114	302,917
1903-04	195.40	30	75	310	1,197,644	512,077	315,212	449,507
1904-05	231.16	31	87	426	1,444,715	580,028	349,964	538,870
1905-06	260.24	34	88	449	1,945,567	822,482	433,730	886,930
1906-07	260.24	37	94	495	2,254,731	943,988	508,584	1,066,521
1907-08	271.24	39	99	595	2,489,315	1,055,728	570,509	1,268,302
1908-09	271.24	54	112	826	2,691,034	1,176,696	711,930	1,530,248
1909-10	271.24	59	122	960	3,009,978	1,380,481	853,814	1,907,66

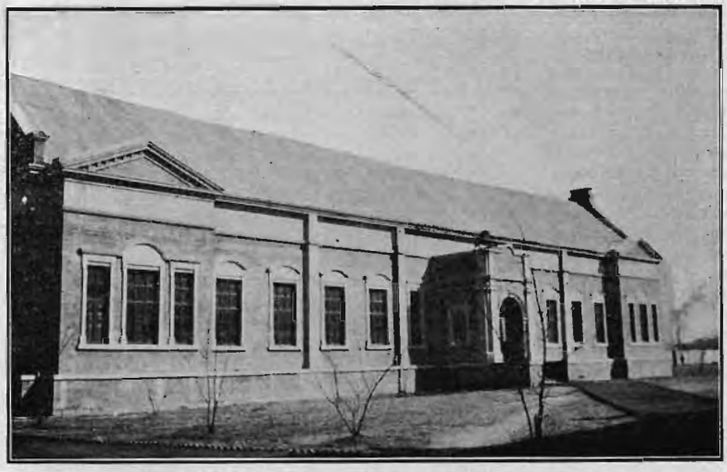
The east and west dormitories were erected in 1906 and accommodate 160 students. They are long two storied buildings facing south. Each building contains forty rooms (each for 2 students), in front of which are wide verandahs. There is an annex to each building including bath rooms and sanitary accommodations. The new dormitory near the east wall, erected in the spring of 1910, is a single storied building consisting of two rectangular enclosures surrounded with rooms. There are accommodations for 128 students in 32 rooms. Additional servants' rooms, stores, and bath rooms are provided.

The hospital is a single-storied building situated in a separate compound adjoining the college grounds, and contains four bright and airy wards, a dispensary, and operation room, a consultation room and servants' quarters. The dispensary and operating room are stocked with all the ordinary drugs and instruments.

The dining hall is a large building with fine open hammer beam roof, situated to the north of the east dormitory. It is divided into two parts, the western room containing the college library and the eastern room serving as dining hall. Kitchen and servants' quarters are attached to this part of the building.

There are foreign residences situated along the north wall of the compound for the president, professors and officers of administration. The residence of the college medical officers adjoins the hospital.

The southern part of the college compound is used as an athletic field. There is an oval



FRONT VIEW OF DINING HALL

WEST HALL AND THE LIBRARY BUILDINGS

LOOKING ALONG THE FRONTAGE OF THE DORMITORIES

THE POWER HOUSE AND DINING HALL

THE INTERIOR OF THE GENERAL READING ROOM

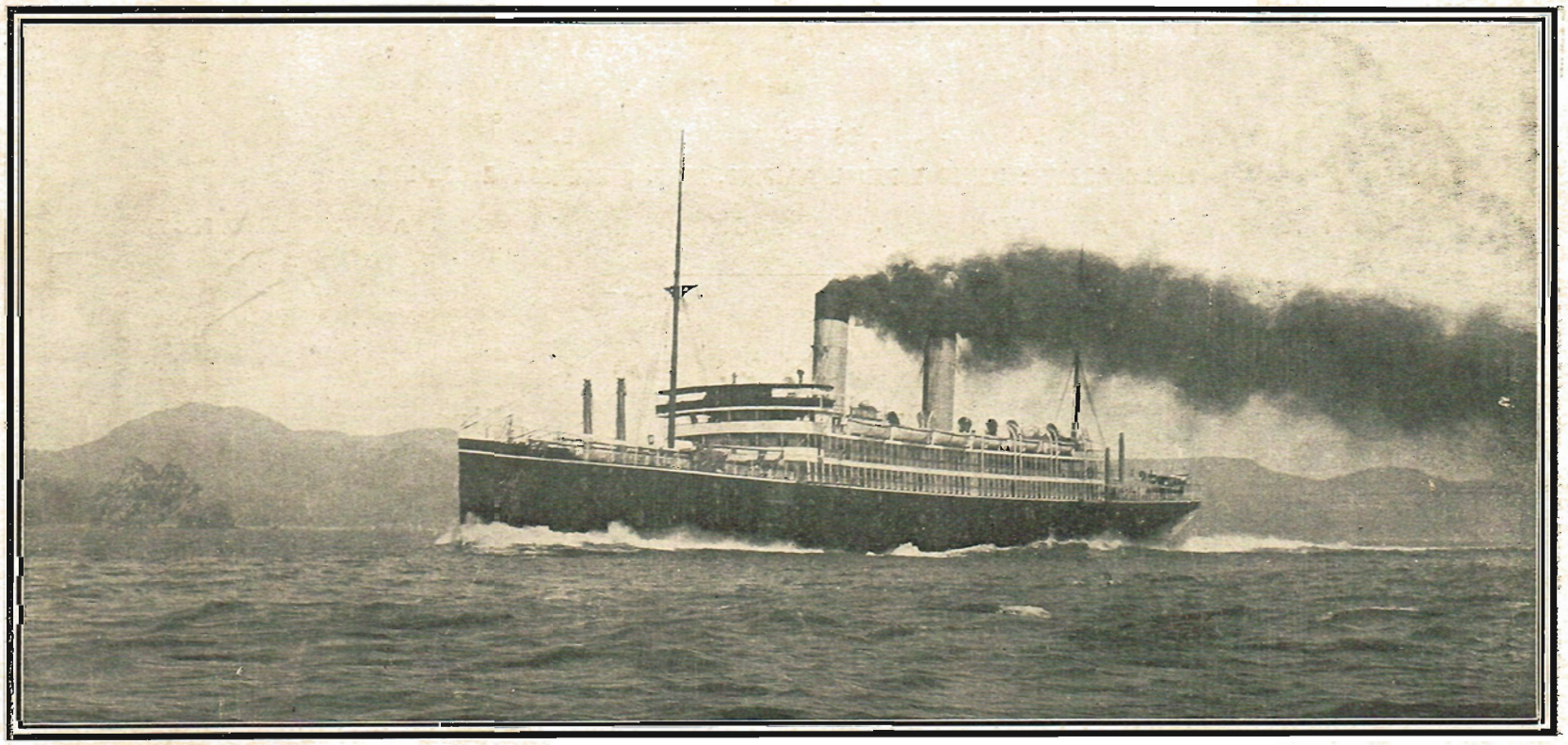
FACING THE LIBRARY AND THE DORMITORIES

THE FAR EASTERN REVIEW

VOL. VIII.—No. 5. MANILA AND SHANGHAI, OCTOBER, 1911. 25 cents, U. S. Cy.

IMPERIAL CHOSEN RAILWAYS

The Opening of the KOWLOON-CANTON RAILWAY



The New Toyo Kisen Kaisha's Pacific Greyhound, the "Shinyo-maru," Built and Engined by the Mitsu Bishi Dockyard & Engine Works at Nagasaki

The Chapei Water and Electrical Works

OPENING OF THE CHINESE SECTION, CANTON-KOWLOON RAILWAY

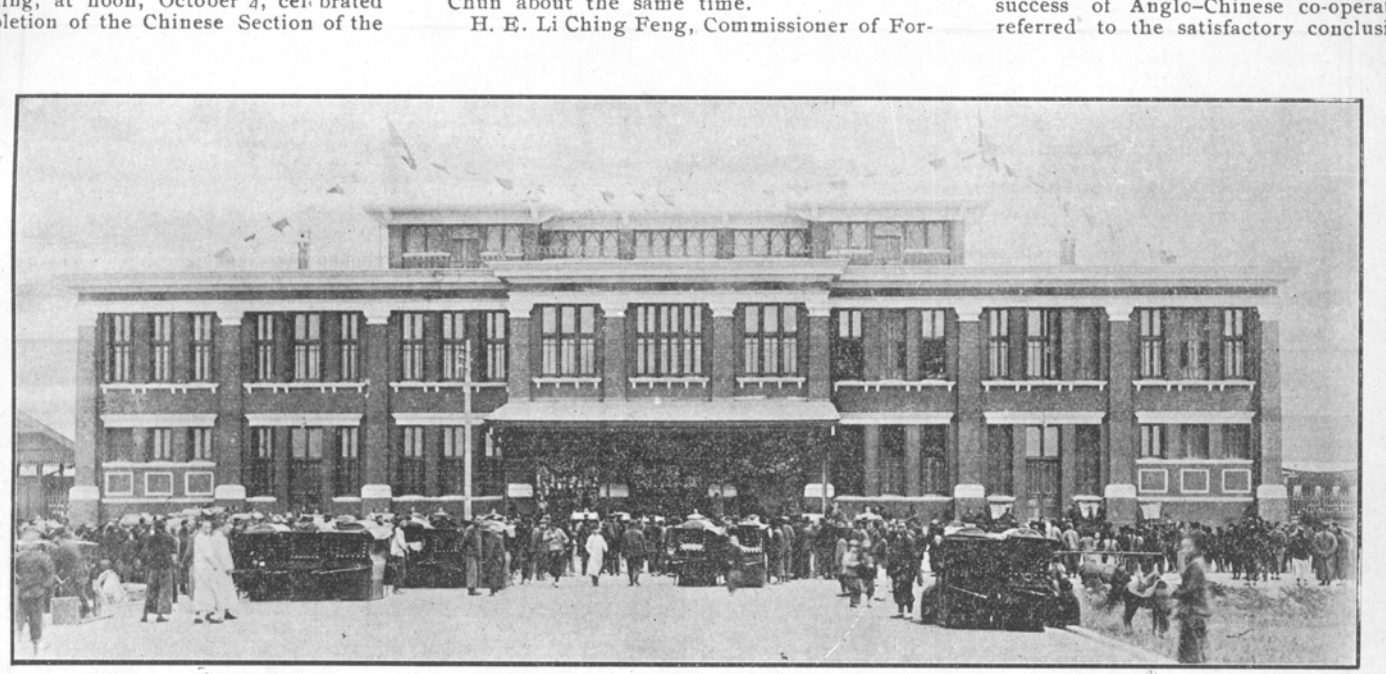
An official luncheon at the station at Sam Chun at the boundary of British and Chinese territory British and Chinese officials participating, at noon, October 4, celebrated the completion of the Chinese Section of the Canton–Kowloon Railway and inaugurated a through service between Kowloon and Canton.

An official train from Canton with the Chinese railway officials and their guests left Canton at 8:45 a. m. arriving at Sam Chun at 12:20, a total distance of 98 miles.

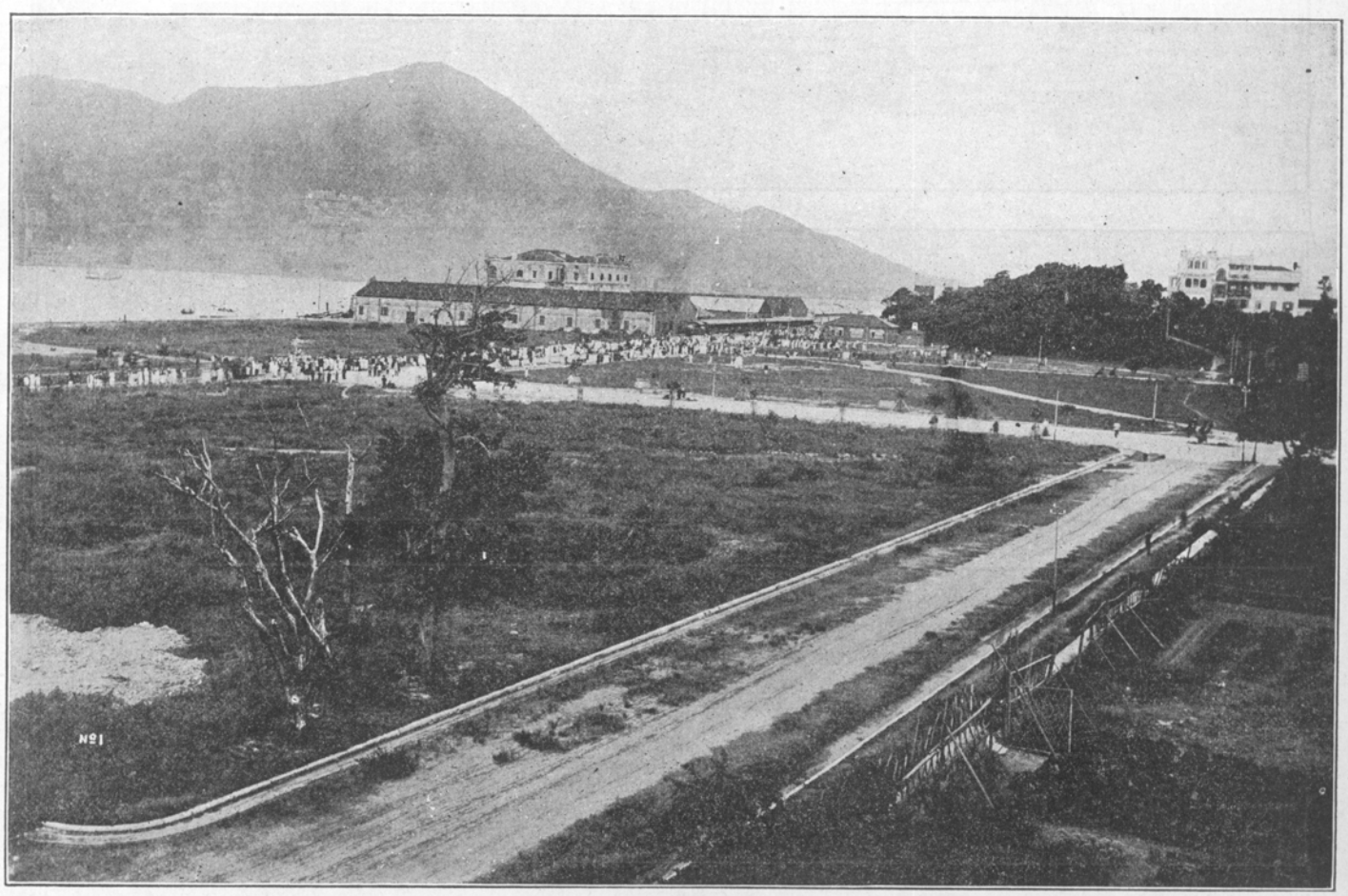
Another special carrying the guests of the railway from Hongkong arrived at Sam Chun about the same time.

H. E. Li Ching Feng, Commissioner of Foreign Affairs, in proposing the toast "Success to the Canton-Kowloon Railway: British and Chinese sections" concluded his remarks by officially declaring the two sections connected and open for traffic.

In response the Hon. Warren B. Barnes, Colonial Secretary of Hongkong, stated that the occasion was one in celebration of the success of Anglo–Chinese co-operation and referred to the satisfactory conclusion of a working agreement for the two sections. He expressed belief that the line would pay from the start. Local traffic alone would, he believed, cover operating expenses and a fair sum towards interest on capital while as



CANTON-KOWLOON RAILWAY.—TAI SHA TOU (CANTON) STATION



THE KOWLOON TERMINAL OF THE BRITISH SECTION

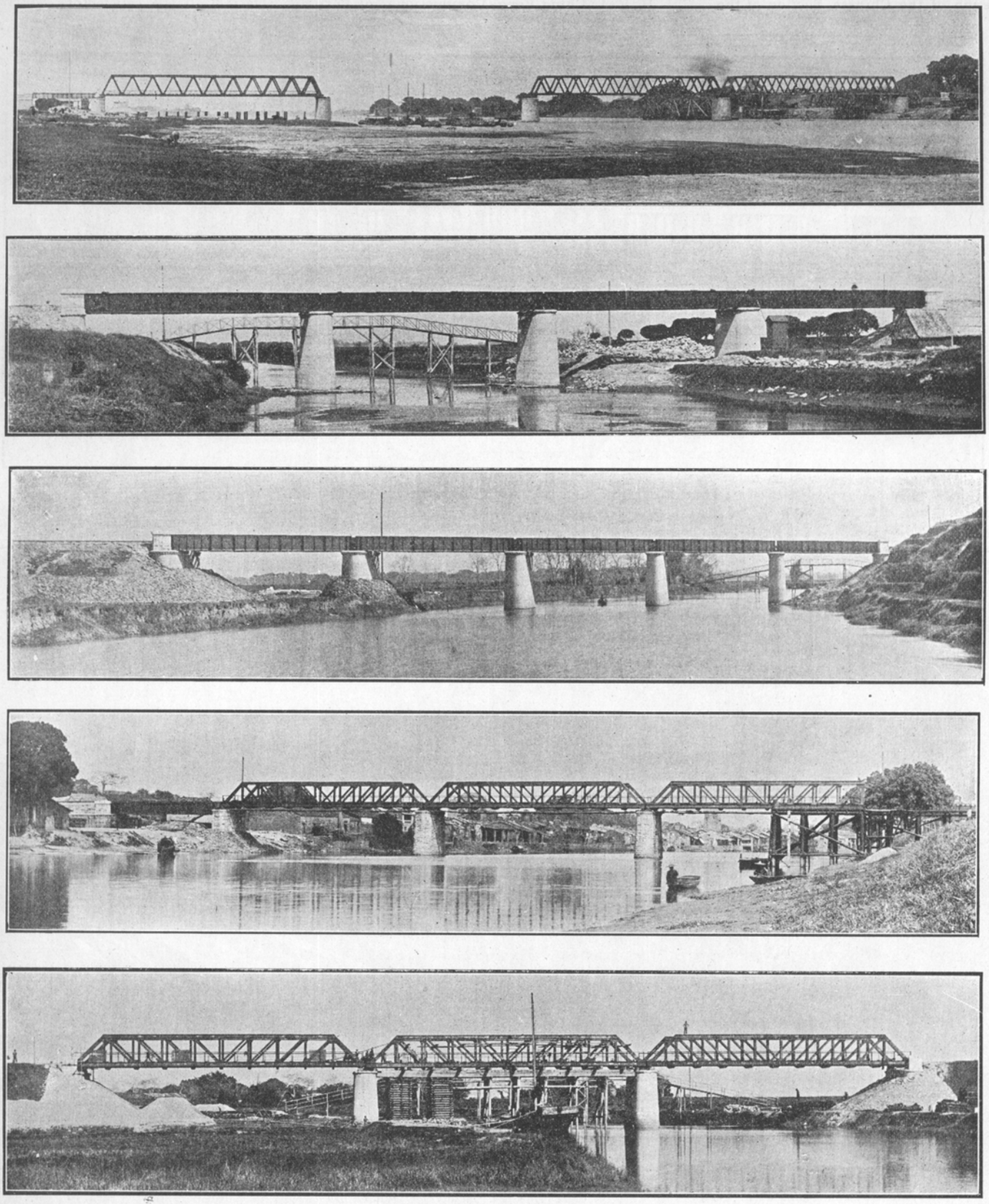
the long distance traffic developed with the lines proposed towards Peking the revenues would steadily increase. He said:

"I anticipate in the next five years, passing through Samchun with a ticket in my pocket for London, and a return ticket at that."

pressed his appreciation of the services of the local authorities, foreign and Chinese staffs. He also made special reference to the splendid services of Mr. Frank Grove, Engineer-in-Chief.

Mr. E. S. Lindsay, Chief Resident Engi-

happy augury of success in the future. If a line 22 miles in length running from Kowloon to Lowu, nowhere in particular, and passing through a thickly populated district of the New Territory can earn enough to almost pay its fair working expenses during



TYPES OF BRIDGES ON THE CHINESE SECTION, CANTON-KOWLOON RAILWAY

His Honor Chao Ching Hua, Managing Director of the Imperial Chinese Section of the Canton-Kowloon Railway, stated that the function marked the strengthening of the close friendship between China and England. He paid a tribute to his predecessor and ex-

neer of the British section, was optimistic as to the future of the line. He said:

"It is just a year since the British section was opened for traffic and the fact that the result of the past year has greatly exceeded our expectations may be taken as a

the first year's operation, what possibilities must there lie before a line five times as long connecting two centers such as Hongkong and Canton and passing through a province whose average population is 450 to the square mile?" He also referred to the

promise of increased traffic as the Canton-Hankow and branches were completed. He expected that the distance between Honkong and Canton would soon be made in four hours.

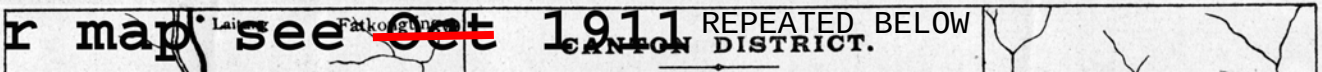
Mr. Frank Grove, Engineer-in-Chief, who has been identified with the Chinese section since its inception and to whom credit is due for the high standard construction and the expedition with which the line was built, was the next speaker. In reviewing the history of the road he said:

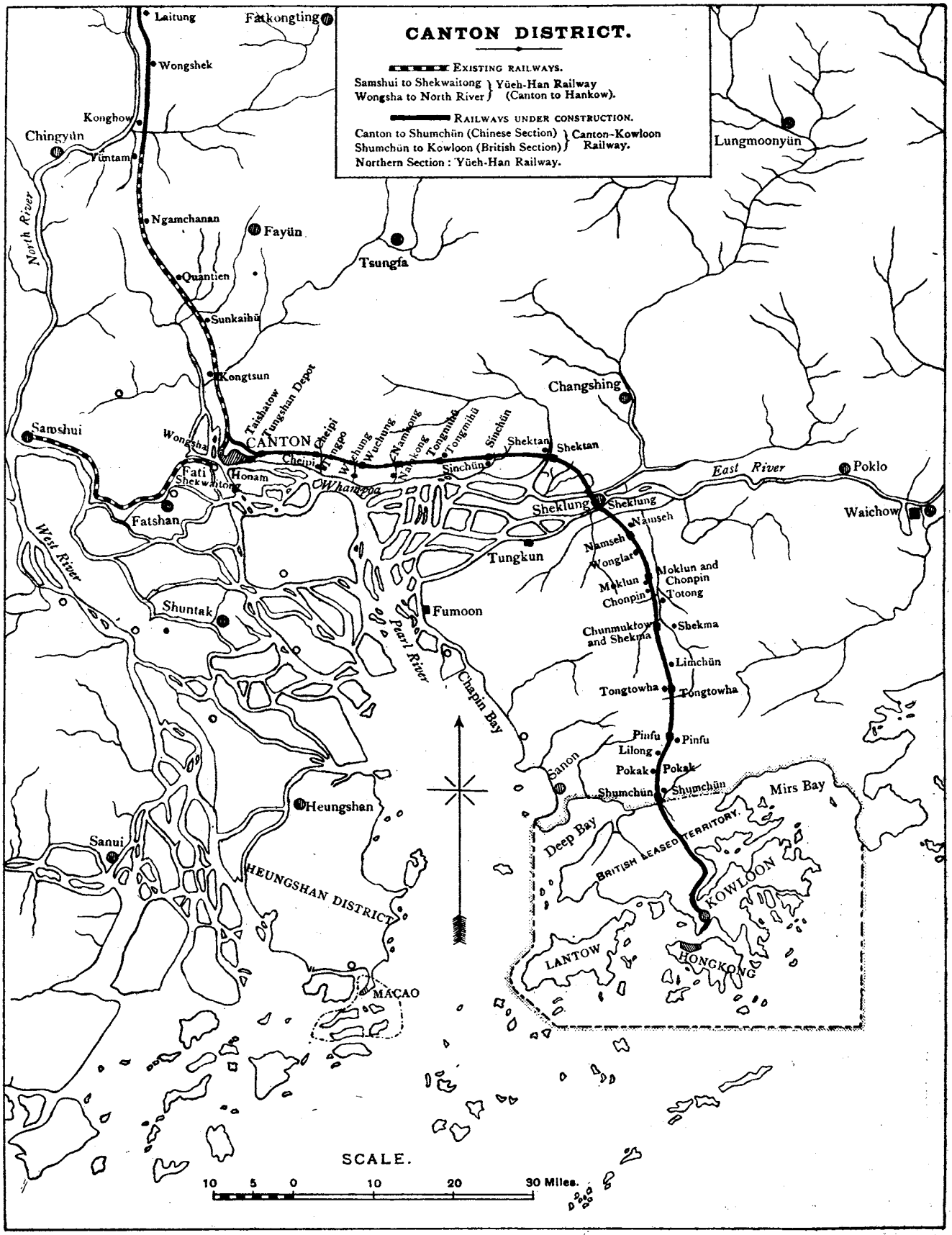
"The survey commenced in August of 1907. Land purchase commenced early in 1908 and construction of works may be taken to date from June of 1908. We have, therefore, taken 3 years and 3 months to build this Railway, or, adding the first few months of survey, just a little over four years altogether. I do not claim that there is much, if any, credit attached to this length of time. One would have liked to say three years instead of four years. Things move slowly in China; but I do claim that the work has been pushed forward continuously, energetically and successfully on the different districts and that many physical and engineering difficulties have been overcome.

"It generally falls to the lot of an Engineer-in-Chief to defend the cost of the railway he builds, but this railway is in the happy position of having been spared criticism and, therefore, I can approach the subject in a light spirit. In September, 1908, I produced, as a result of the detailed survey, an estimate of cost and length of time probably required to complete this line; the former in round figures was 12½ million dollars, including administration charges, police, cost of land, etc., but excluding the interest and service on the loan; and the time I named was three years and ten months, the date for completion being given as June 1911.

MAY

for map see Oct 1911 REPEATED BELOW



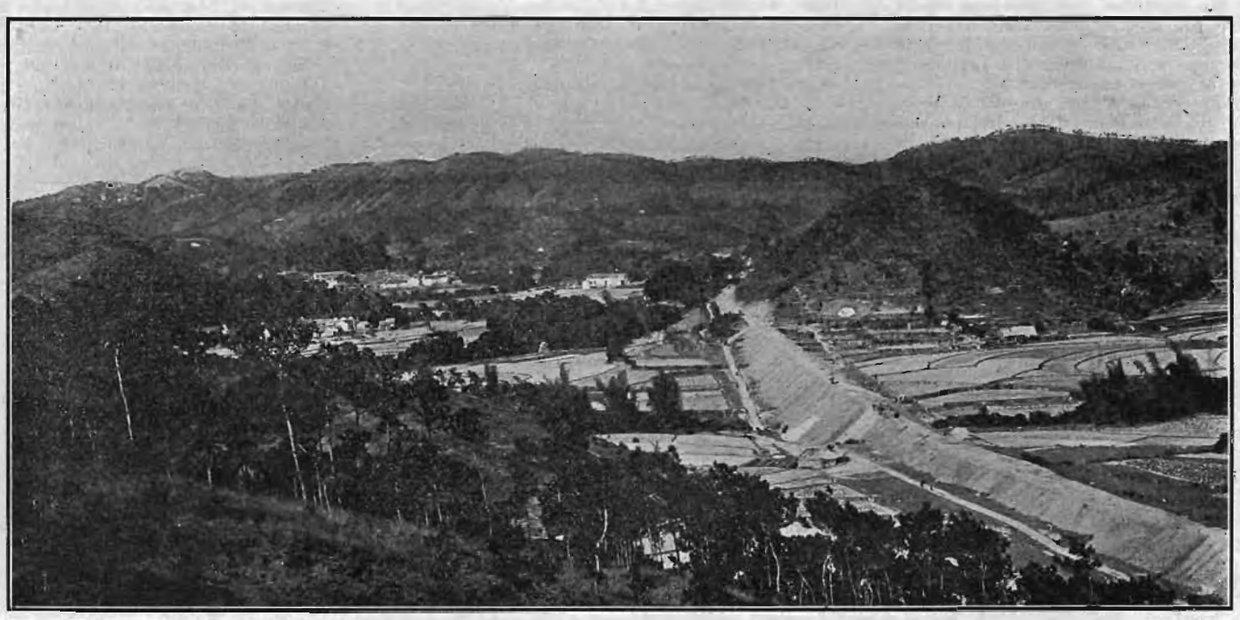


Canton Trade Report, 1908.

MAP OF THE CANTON DISTRICT SHOWING CANTON-KOWLOON RAILWAY LINE

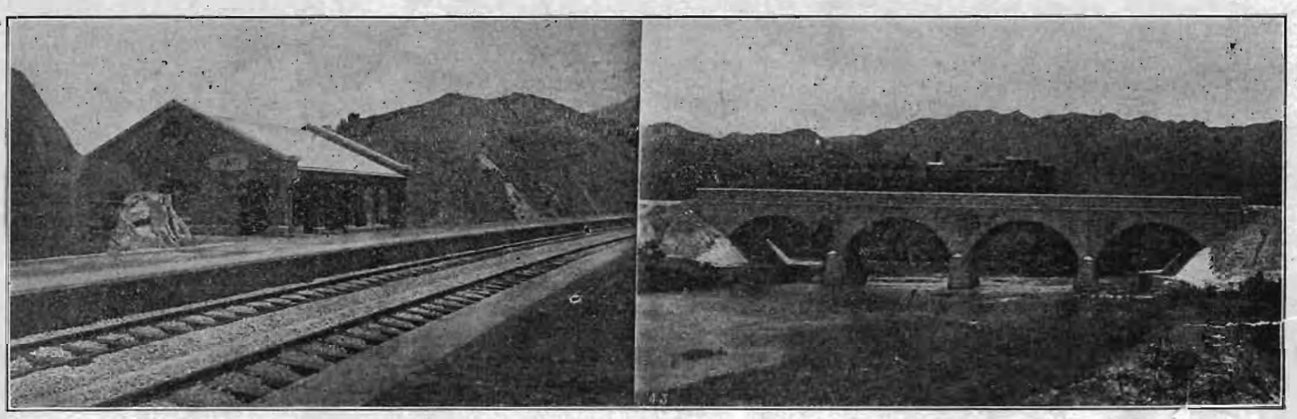
We have taken a few months longer to complete the line, but the cost will be within the limits of my estimate. (Applause.) This, gentlemen, is, I believe, a satisfactory condition of things, but it has been attained only by the active and loyal help of all departments.

"Some of the heaviest work has been carried out by engineers unfortunately not present to-day. May I mention Mr. Boothby, who had charge of the East River Bridge section; Mr. Fraser, who made an excellent location of the line from Mile 50 to Mile 89, mostly through difficult and hilly country. Mr. Moore is still with us, fortunately. He has successively had charge of No. 1 and No. 3 Districts and has done excellent work on each. I must also specially mention Mr. Thompson, who is so proud of his locomotives and rolling stock; Mr. Hall, our active Chief Accountant; and Mr. Fischer, whose store department has always been kept in good order. I wish I had time to give more references to our staff, but time forbids. But we have been fortunate in both foreign and Chinese staff, and that means everything for economy and efficiency. (Hear, hear.)



MILE 83, LOOKING NORTH, CANTON-KOWLOON RAILWAY.

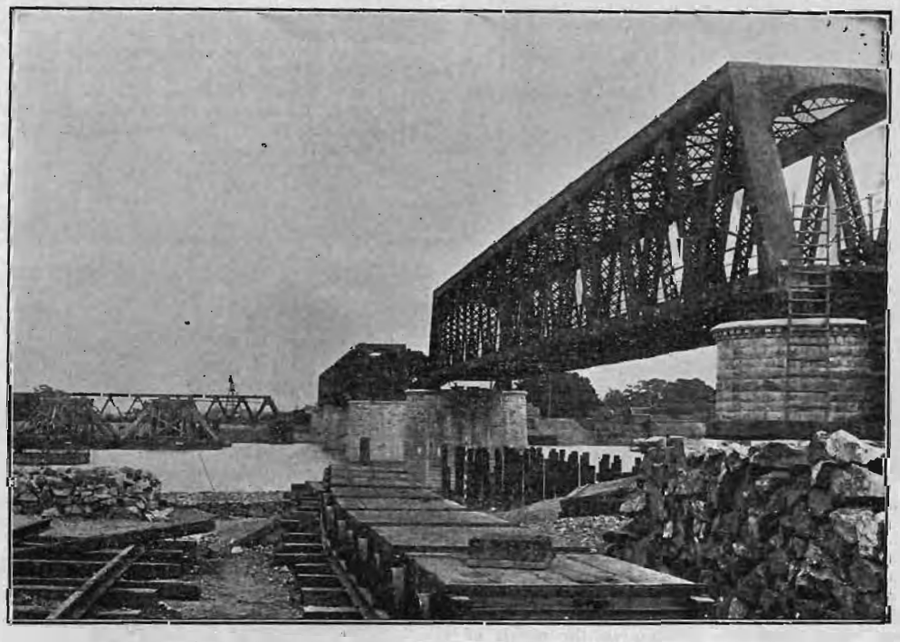
TAI SHA TPU STATION (CANTON).



TYPICAL STATION ON BRITISH SECTION KOWLOON-CANTON RAILWAY. BRIDGE CONSTRUCTION ON THIS LINE.

FRANK GROVE, M. I. C. E., ENGINEER-IN-CHIEF

TAOTAI CHAO CHING-HUA, MANAGING DIRECTOR

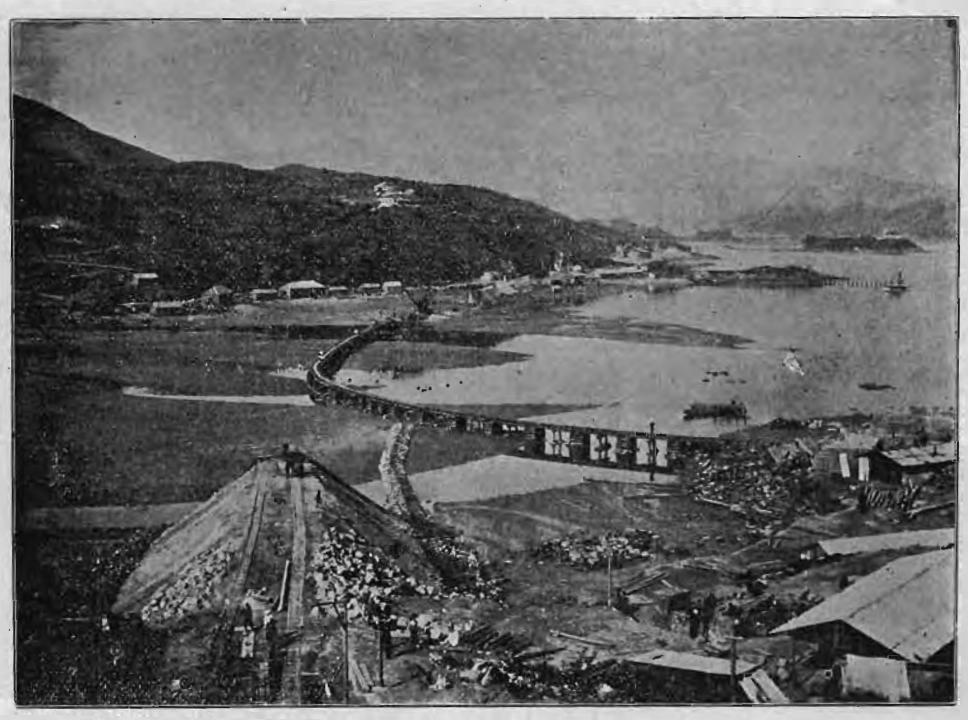


THE TUNG KUN RIVER BRIDGE, CANTON-KOWLOON RAILWAY.

C. T. LIU, TRAFFIC MANAGER.

"Until recently the idea was generally held that the Chinese section went through level paddy fields and had a few bridges. This is not quite a correct description. The hilly portions of country passed through present interesting features and some of the cuttings have given considerable trouble. Our ruling grade is 1 in 150, of which we have over 17 miles; 56 per cent. of our total length is on grade and 44 per cent. on level. Curvature of the line is 24 per cent. of the total length. The earthwork is on the whole what is termed 'heavy.' It has cost $20,700 per mile, which includes all charges for rock, earth, and protection works. The volume is equal to a bank of our type section 11 feet high throughout for 89 miles. Sufficient has been already stated and published with regard to the large bridges. We have 46 girder bridges with a clear opening of 4,868 feet and 39 arched bridges over 5 feet span with an opening of 546 feet. There are an unusual number of culverts under 5 feet, namely 140, with an opening of 544 feet. The total opening therefore, provided by these bridges, arched bridges and culverts is 5.958 feet, or 67 feet per mile. In addition there are 265 barrel or pipe drains with an opening of seven square feet per mile. As an instance of the comparative amount of large bridge work on the Chinese section, I may say that the total weight of steel work in girders and foundations is 4,725 tons, or 53 tons per mile, while that used on the Shanghai-Nanking Railway amounted to 9¾ tons per mile only. There

IOWU STATION AT THE BOUNDARY LINE BETWEEN BRITISH AND CHINESE TERRITORY AND TERMINAL OF BRITISH SECTION.



VIEW FROM NORTH PORTAL OF TUNNEL NO. 5 ON BRITISH SECTION DURING CONSTRUTION.

are 27 stations, 13 of which are halts or semi-permanent stations until traffic justifies their recon-truction on more permanent lines. We have four watering stations and three running sheds under construction and shortly to be finished, with workshops and such other equipment as is essential for present needs. The track and ballasting, I think, will be admitted to be up to a first class standard. There are 89 04 miles of main line and 11.46 miles of sidings and loops, making 100½ miles altogether of single track A depot has been provided at Tungshan for the eventual junction with the Yueh Han Railway, and sufficient land with sidings and sheds are ready, but the junction station will not be undertaken until the loop line passing to the north of the city is under construction. Finishing touches are here and there required, but I have every confidence that our Chinese section will prove itself equal to what is expected of it, at first to deal satisfactorily with the important traffic between Hongkong and Canton, and later on as a link in the great Southern Trunk Line. (Loud App'ause.)

The Hon. C. H. Ross, representing the British and Chinese Corporation, proposed the toast "Success to Railway Enterprise in China." He reviewed the history of railways in China and of the future of proposed lines. He said:

"What about half a century ago was merely a 'great need' has to-day become an 'imperative necessity,' which I am glad to say is now clearly recognised by all the leading statesmen of the Empire, and it is pleasing to note that no less than three great trunk lines (Tientsin-Pukow, Canton-Hankow, and Hankow-Szechuen) are now in active progress. For the present, however, China cannot construct her railways without the assistance of foreign capital, and this can only be obtained subject to an Imperial guarantee. I think, therefore, that the recent decision of the Imperial Government, that all the important truuk lines shall be State-owned, is a wise and far-seeing policy, and though it may now cost considerable sums to fully satisfy the claims of the various local and provincial companies, yet in the end the money will be well spent, as China will be saved from evils which would result from lack of central control, and from the friction which would inevitably arise when local considerations clashed with Imperial requirements. (Hear, hear.) For years to come also, China must look mainly to foreign engineers to superintend the construction of her railways, and, in this connection, I would, with all respect, venture to remind her that the better the class of engineers employed, so much the better will the experience be of the numerous young Chinese engineers now being trained, and to whom in the not distant futnre she must look to control and carry on these great enterprises.

"Finally—and perhaps to China the hardest task of all—she must realize that efficient maintenance of her railways is the only sound policy, and that to allow a well constructed line to go to rot and ruin for lack of efficient maintenance or supervision is a suicidal policy, which must react to the great detriment of the Empire.—(Applause.) All the world knows that China has conceived and carried out great enterprises,—some of them perhaps on a greater scale than any hitherto attempted by other nations,—but, alas, which of her many great works has been efficiently maintained? As an instance, witness the Grand Canal and that magnificent conception, the Tungchow Road."

The other speakers were Taotai Cheng Yung, Director of the Police Department of the Chinese Section, H. E. Lung Chien Chang, Councillor, Board of Communications, and Mr. J. W. Jamieson, H. B. M. Consul General at Canton.

GERMAN DUMP CAR USED ON BRITISH SECTION,

FAR EASTERN RAILWAY NEWS

CHANGSHA-CHU-CHOU SECTION OPENED.—On September 10 a special train of eight coaches made a through trip from Changsha, Hunan, to Chuchou, a distance of approximately 35 miles. The permanent bridge work over this section has not yet been completed, but the distance was covered in about two hours. A service of one train daily each way is maintained.

STANDARD GAUGE FOR FORMOSA.—The program of railway construction on the Imperial Taiwan Railways includes the widening of the present gauge to standard and to double track the Keelung-Taipeh section.

RAILWAY TO BAGUIO.—The proposed construction of a railway from Aringay on the Northern line to Baguio by the Manila Railroad Company is expected completed within two years and in the meantime the old road to Baguio from Camp One will be utilised, by means of a narrow gauge auto-traction tramway as far as Camp 4 and from that point by automobiles to the summer capital. The latter improvements will be completed before the 1912 season.

THE PHILIPPINE RAILWAY CO.—On September 20, E. G. Carrera assumed the duties of acting auditor of the company on the departure of A. Strausz jr, auditor, for the United States on leave. R. R. Hancock, secretary of the company, has undertaken the duties of acting general superintendent with headquarters at Iloilo. He has also assumed charge of construction work, relieving B. B. Harris, assistant chief engineer for J. G. White & Co. who returned to the States upon practical completion of construction work. H. A. Glover, secretary to W. B. Poland, vice-president and chief engineer, in addition to his other duties, was appointed acting trainmaster vice Gifford Jones who is absent on leave.

RAILWAY MATERIALS IMPORTED INTO FORMOSA.—Trade reports for 1910 state that the import of rails was as follows:—Germany 9,562 tons (£55,314); United States 2,455 (£13,836); United Kingdom 3 (£72); Belgium 3 (£39). Total 12,023 tons (£69,261). And of bridge materials the principal suppliers were:—United Kingdom £23,262; United States £19,643; Germany £19,037. The small balance came from France and Hong Kong.

RAILWAY CONFERENCE AT PEKING.—The Ministry of Posts and Communications has issued a circular to the officials of the different railways in China announcing that a conference will be held at Peking on October 22 for the purpose of discussing the standardization of construction, equipment, and methods of administration and operation of all railway lines in the empire. This will include the adoption of standard specifications for rolling stock, tariff rates, control of trains, safety device, rules and regulations governing operation, etc.

THROUGH TRAFFIC FROM HONGKONG TO CANTON.—Tariff rates over the 110 miles of the Kowloon-Canton Railway are as follows: First class fare $5.00 Hongkong money; second class $2.50, and third class fares $1.25.

THE CANTON-HANKOW RAILWAY.—A. H. Collinson engineer-in-chief of the Canton-Hankow construction, has concluded an inspection of the American survey of the route made by Mr. Parsons for the China-American Development Co. from Wuchang to Yochow and with some slight changes will recommend it. This section is about 150 miles in length and passes from Wuchang South through Hsiniang, Puchi, Yanglotung, Lucao, and Yunshi to Yochow. During this inspection high water, occasioned by the heavy floods, gave the engineers an opportunity to make observations of value in providing the maximum percentages of safety in construction. The contract of the terminal offices at Wuchang has been let.

CHEFOO'S RAILWAY CONNECTION.—The abandonment of the Chefoo-Weihsaw railway project and the proposal now made to substitute a line from Chefoo connecting with the Tientsin-Pukow lines at Tsining is being discussed. This line would in a measure compete with already existing railways and a large measure of opposition to its construction is anticipated.

KIOCHOW-YICHOW LINE.—A report from Peking given more or less credence is to the effect that the Deutsche-Asiatische Bank has arranged a loan for the construction of this line which, if built, would compete with the Haichow-Hsuchow line. The loan is reported to be for Tls. 8,000,000 redeemable in ten years.

MANILA RAILROAD COMPANY'S CONSTRUCTION.—Regardless of the heavy rains this company is making rapid headway on construction. The Cavite line to Naic is practically completed and work on the southern lines towards Lucena is progressing. In all there are about 650 kilometers, a large part of which is under construction to be completed by 1918. Of the through line from Manila to Lucena which is 140 kilometers in length, but 40 miles are to be constructed. A line is projected from Lucena south to Legaspi which will make over 300 kilometers from Manila to the most southern terminus.

DAMAGE FROM FLOODS.—The recent heavy floods that prevailed throughout the Philippines, China and Japan resulted in much damage and delay to railways. In the Philippines there were several washouts and traffic was delayed. The damage, however, was quickly corrected and notwithstanding two very severe typhoons, traffic has been fully restored.

In Formosa and South, Central, and North China reports indicate very severe floods with serious delay in traffic. In Manchuria, the Liao River overflowed its banks, and owing to the low lying character of the country carried away embankment on the I. R. N. C. and the South Manchuria. The country for many miles was under water and severe damage to crops is reported. Traffic on the I. R. N. C. was suspended, but as a soon as the waters abated great activity was displayed in repair work.

SHAHO RIVER BRIDGE.—The contract for the construction of a bridge over the Shaho for the Peking-Mukden line has been let to the South Manchuria Railway Co.

CANADIAN PACIFIC RAILWAY.—At a meeting of the directors of the Canadian Pacific Railway Company dividends of 2 per cent. on the preference stock for the half-year and of 2½ per cent. on the common stock for the quarter ending June 30 last were declared. The results for the fiscal year to June 30 last were:—Gross earnings from railway and steamship lines, £20,833,561; working expenses, £13,493,595; net earnings from railway and steamship lines, £7,337,966; the net earnings of steamships in excess of the amount included in the monthly reports were £223,670; deducting the fixed charges—£2,002,214—there remains a surplus of £5,561,421; deducting the amount transferred to steamship replacement account—£200,000—and deducting the contribution to the pension fund—£16,000—the nert revenue from railway and steamship lines available for dividend is £5,345,420. After payment of all dividends declared for the year, the surplus from railway and steamship lines for the year carried forward is £2,374,648, the special income from interest on land sales and from other extraneous assets not included in the above is £1,320,441.

ADDITIONAL LOAN PROPOSED.—The Ministry of Posts and Communications has presented a memorial requesting an additional loan of Tls. 30,000,000 from the international syndicate to be utilized in redeeming the private railway interests in cash.

TUAN FANG'S PROCLAMATION TO THE SZECHUANESE.—The Imperial Railway Commissioner, who was directed to proceed to Szechuan for the purpose of enforcing the Nationalization Decree to which local objection in the form of a serious disturbance was made by the railway officials, issued a proclamation, part of which we reproduce:

"I have been appointed to come to Szechuan solely to make known the benevolent intentions of the Throne. The troops I am bringing with me are simply for the purpose of suppressing banditti. The object of the Throne in taking over the railways is because of their great importance to the State, and because the Szechuan railway is specially difficult to construct. The construction of this road is a burden greater that the Szechuan people can bear, and is likely to reduce them to poverty before they can get through with it. As a special favor to them the Government takes over the railway and puts a stop to enforced subscriptions, proposing to provide all the necessary funds itself. The Szechuan people ought to have been delighted and grateful for this favor, but instead of that busybodies have been declaring that the Government is robbing them, and that in connexion with the loan they will lose their independence. They do not know that the North-China Railway and the Peking-Hankow Railway were built with foreign money, and that they have been extremely lucrative enterprises to the country without its losing a grain of its independence. Further the new loan agreements are much more favorable to China than those under which the previous railways were built. These things they did not inquire into, but proceeded to raise disturbances, shutting the schools closing down the markets, refusing to pay taxes and every way behaving like rebels. They did not think that genuine rebels would take advantage of the opportunity to plunder the people, to kill your sons and daughters, to burn and destroy till you all tasted the miseries of insurrection. For banditti of that sort the Throne has no mercy, and it has sent me to deal with them alone."

The proclamation further states that the books containing the names of those who formed societies to protect the railway are to be burned. It points out that, although the railway belongs to the State, it will still be the people's railway, new shares will be given for old. The proclamation concludes: 'Let there be no more trouble. Let business proceed as before. Let the taxes be paid and all be peaceful. Then can the railway be built, the Throne will be gratified, I shall be gratified and all the people of Szechuan will reap the benefit."

HUPEH RAILWAY SURVEYS.—Director General Tuang Fang has reported to Peking that a re-survey of the lines places the mileages in Hupeh as follows: from Tunghsiang gate at Wuchang to Yochow, 190 miles, from Kuangsui to Fancheng 130 miles, and from Hsiangyang to Shasi 207 miles.

TOKYO RAILWAY CO.—The report for the last six months places the number of passengers carried during the term at 99,400,681 and the revenue at yen 3,517,545.26. The following is the statement submitted and approved:

	Yen.
Net profits	1,944,788
Previous Balance brought over from accounts	22,229
Total	1,967,017

The No. 1335 type set, a metal wall set made in capacities for 16, 20, and 24 line stations, is also described, as well as the No. 19 cable terminal. In addition to these new sets, all the standard sets manufactured by the company, together with accessories and supplies necessary for the complete installation of inter-phone systems, are shown.

THE FAR EASTERN REVIEW

VOL. VIII.—No. 6. MANILA AND SHANGHAI, NOVEMBER, 1911. 25 cents, U. S. Cy.

His Excellency YUAN SHIH-KAI,
upon Whom Peking Depends to Save the Dynasty—Recalled from Retirement by the National Assembly to the Premiership, to Restore Order in China

The "Hsin-Han" Revolution

The Chinese in the Philippines

The Japanese Mining Industry

Types of American Locomotives

TYPES OF AMERICAN LOCOMOTIVES POPULAR IN THE FAR EAST

The conditions which governed the trend of American locomotive design have been, in many respects, very different from those upon which European locomotive practice has been based.

In the early periods of locomotive building in the United States new territories were opened up and developed by the construction of thousands of miles of railroads in a comparatively short period of time. Economy of time and money made it impossible to follow the same standards of road construction adopted in European countries where the same conditions did not exist.

Later, in order to handle the enormous volume of traffic which followed the development of this vast country by the railroads, the demand became incessant for locomotives of greater and greater power.

As a result of these governing factors, the American locomotive is today characterized, probably more so than those of any other build, by ruggedness, power and adaptability to varying and difficult conditions of track construction and location.

In China and other countries of the Far East the conditions of railroad development are closely analogous to those existing 40 years ago in the United States; and it is because of its peculiar fitness to meet these conditions that the American designed and built locomotive is growing in favor in the eyes of our Eastern railroad officials.

One of the recent shipments of locomotives from the United States to the Far East was a consignment of 9 for the Korean Lines of the Imperial Government Railways of Japan. One of this order, locomotive No. 222, is shown in one of the accompanying illustrations. They are of the 460 or ten-wheel type, a popular all round class of locomotive; and are representative of the most powerful design of their class on the above lines where they are operating in heavy express service. In working order they have a total weight of 149,100 pounds of which 117,200 pounds is carried on the driving wheels, approximating the maximum allowable on the Korean Lines. With cylinders 20×26 inches, driving wheels 66 inches in diameter, and a boiler pressure of 180 pounds per square inch, they exert a theoretical maximum tractive power of 24,100 pounds.

This order was built by the American Locomotive Company whose agents for the Far East are Mitsui and Company.

This company, the largest one of its character in the world, has an annual capacity of over 3,000 locomotives a year. Figuring on 300 ten-hour working days a year, this means an output capacity of a complete locomotive every hour.

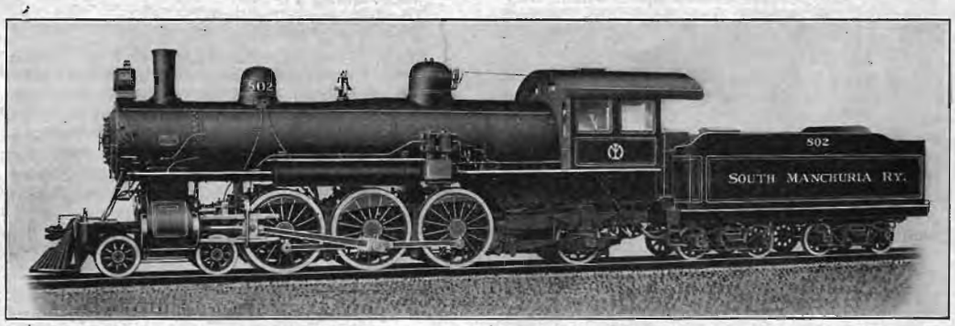
It was incorporated in 1901, with a capital of $50,000,000 and formed by the consolidation into one company of eight of the leading locomotive manufacturers in the United States. The various companies which were absorbed by the consolidation or have since been acquired are:

The Schenectady Locomotive Works
The Brooks Locomotive Works
The Pittsburgh Locomotive Works
The Richmond Locomotive Works
The Cookes Locomotive and Machine Company
The Rogers Locomotive Works
The Manchester Locomotive Works
The Dickson Locomotive Works
The Rhode Island Locomotive Works.

Under their original corporate names, many of these plants are well and favorably known in the Far East where their locomotives have long been extensively used.

While the individualities of the former independent locomotive works have necessarily disappeared since their consolidation into one company, the centralization of the Engineering and Manufacturing Departments has resulted in all of the best features of the various plants being retained; while at the same time, design and manufacturing methods have been simplified and standardized. In consequence, the products of all of the plants of the American Locomotive Company have been raised to a uniform quality of the highest standard.

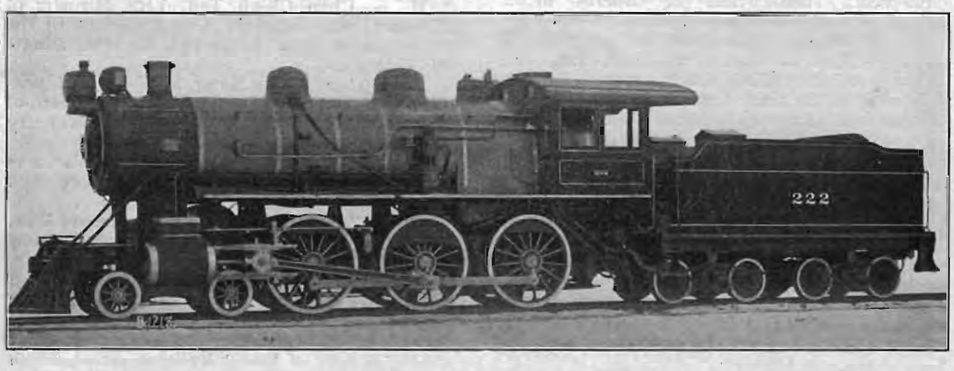
To extend the export of locomotives of this company a Foreign Department was created in 1905, which has charge of the exporting business. Special technical engineers were sent to various parts of the world to come in more direct and closer touch with locomotive purchasers so as to enlarge this company to furnish locomotives to suit the requirements of the purchasers and the conditions obtaining in the different fields outside of the United States.



WEIGHT 196,800 LBS., TRACTIVE POWER 25,600 LBS.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE SOUTH MANCHURIA RAILWAY

WEIGHT 111,200 LBS., TRACTIVE POWER 16,844.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE YUEH HAN RAILWAY

WEIGHT 279,500 LBS., TRACTIVE POWER 60,400 LBS.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE CENTRAL RAILWAY OF BRAZIL



WEIGHT 149,100 LBS., TRACTIVE POWER 24,100 LBS.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE IMPERIAL CHOSEN RAILWAYS

As a result of effective organization and greater output capacity due to increased manufacturing facilities, the export business of this company has been greatly increased.

The greatest increase has been with the Far East. During the last half of the ten years since 1901, the year of incorporation, the total number of locomotives shipped by this company to China, Japan and Manchuria was over four times the number exported to those countries during the first half of this period.

The locomotives constructed by these builders, shown in the accompanying illustrations represent types in most common use in the above mentioned countries.

All follow the lines of American Locomotive practice throughout, except for certain minor modifications to meet conditions peculiar to the service for which they were designed.

The 280 or consolidation type locomotive No. 1009 was one of an order of 180 built for the South Manchuria Railway which we believe was the largest single order ever placed with an American locomotive builder by a foreign road. This is the type of locomotive at present most used for freight service. The design here illustrated is among the heaviest in operation on the South Manchuria Railway having a total weight of 171,000 pounds. It is designed to deliver a maximum tractive power of 38510 pounds.

Locomotive No. 802 of the Pacific (462) type, the most popular type of powerful express locomotive was part of the same order.

A lighter class of freight locomotive is shown in the illustration of the Mogul (260) type built for the Kwong-Tung Yueh Han Railway. This was one of an order of six. It has a total weight of 134,500 pounds, and a tractive power of 24,100 pounds. It is equipped with the Walschaert valve gear which has practically replaced the Stephen link motion in the United States, and for the introduction of which into that country, the chief credit belongs to the American Locomotive Company.

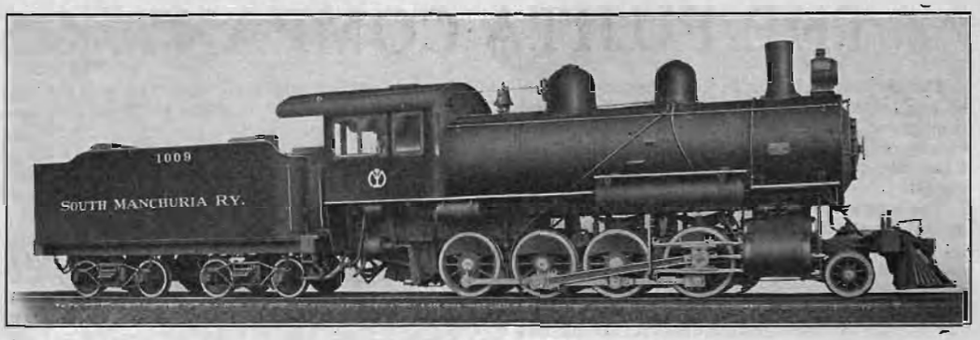
The serious attention of American locomotive builders was first directed to this type of valve gear in working out the American design of the Mallet compound type of locomotive which was also introduced into the United States by these same builders.

During the past four years there has been a very rapid increase in the use of the Mallet type by American railroads and American built Mallets are also gaining rapidly in favor in Mexico, South America and Africa.

This type is practically two locomotives combined in one with a common boiler. There are two sets of cylinders connected to independent groups of driving wheels, the front group having an articulated connection with the rear one about which it can swivel in a manner similar to an ordinary locomotive truck.

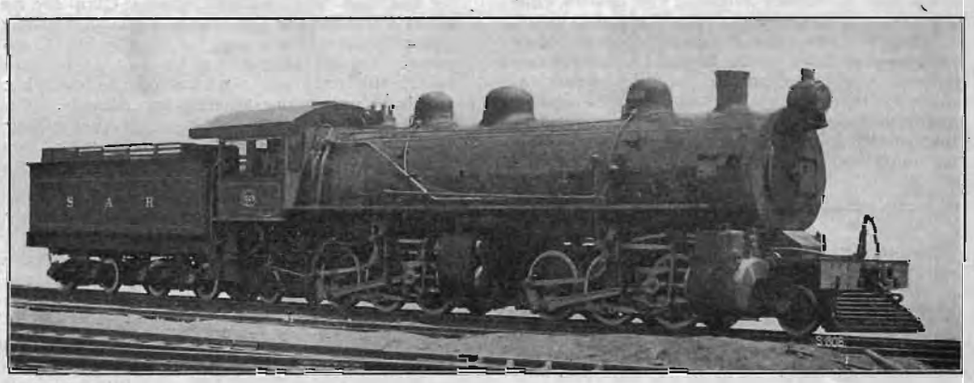
This type offers the possibility of the concentration of enormous power in a single unit and under conditions favorable to its use, affords the means of handling the greatest amount of traffic at the least operating cost. Three designs of Mallet locomotives, having different wheel arrangements, are shown in the accompanying illustrations. That built for the South African Railways is of the 2662 type having a two-wheel truck, front and back. This was one of a lot of 20 which followed the purchase of a single locomotive of the same type for trial purposes.

In the two designs built for the Central Railway of Brazil, all the weight is carried on the driving wheels and no trucks are employed. These two locomotives strikingly illustrate the possibility inherent in the Mallet type for development to meet increasing requirements.

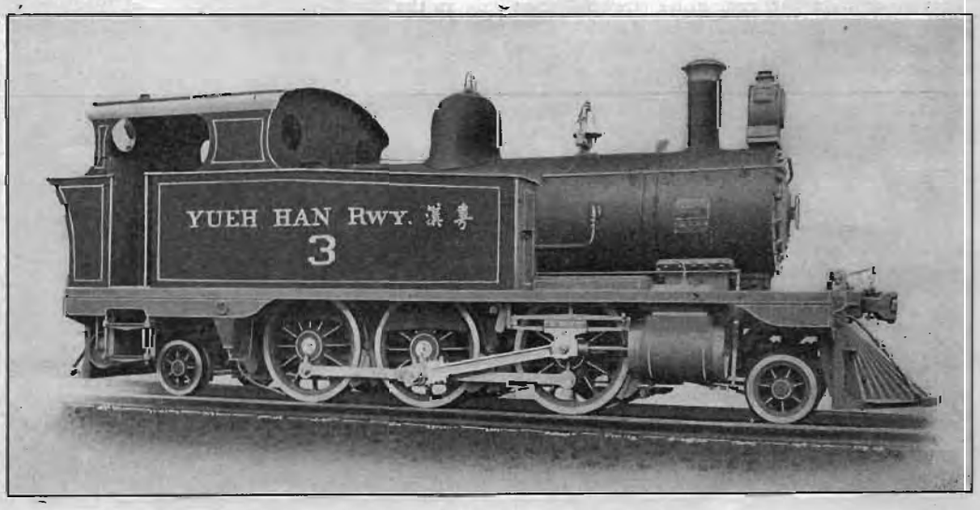


WEIGHT 171,000, TRACTIVE POWER 38,510 —BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE SOUTH MANCHURIA RY.

WEIGHT 134,000 LBS., TRACTIVE POWER 24,100.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE KWONG TUNG YUET HAN RY.



WEIGHT 230,000 LBS., TRACTIVE POWER 47,700 LBS —BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR SOUTH AFRICAN GOV'T. RAILWAY.



WEIGHT 98,800, TRACTIVE POWER 24,100 LBS.—BUILT BY THE AMERICAN LOCOMOTIVE CO. FOR THE CANTON-HANKOW RY.

THE FAR EASTERN REVIEW

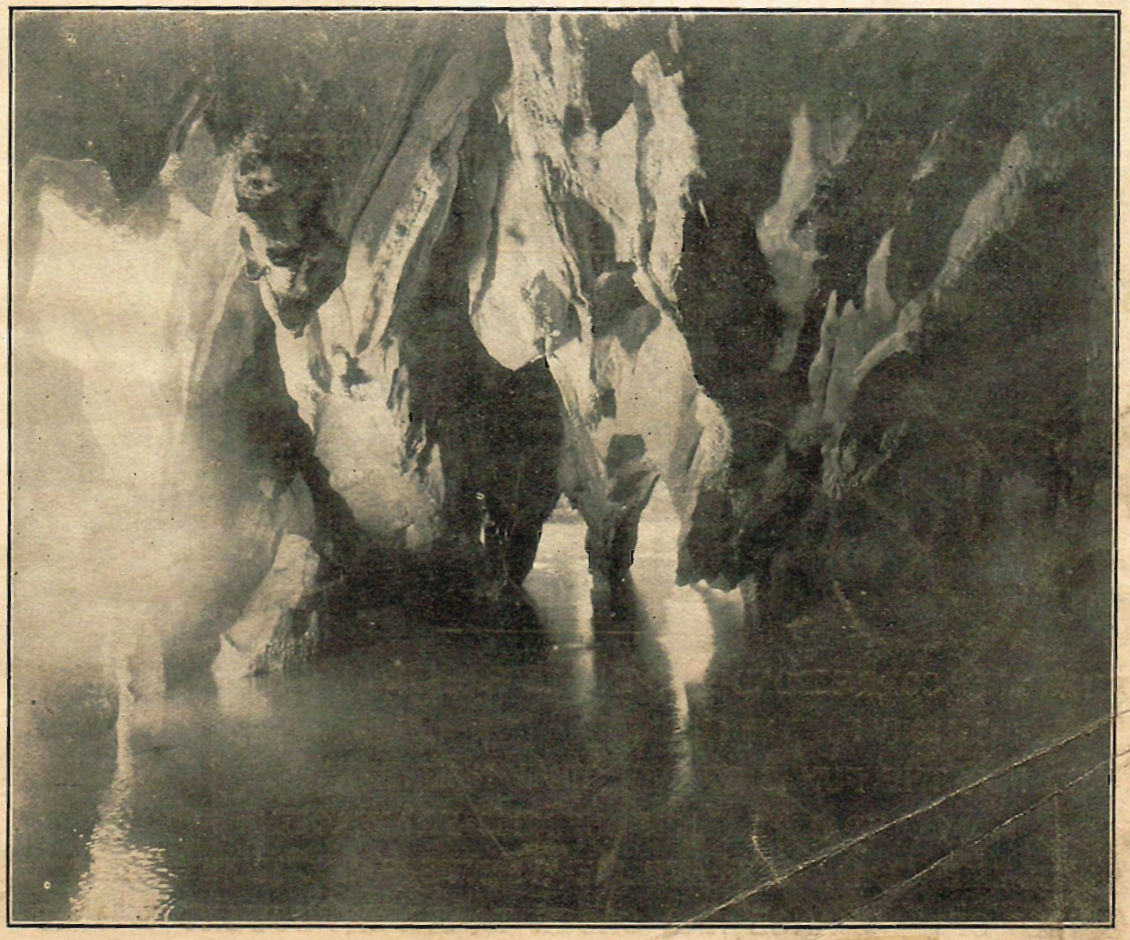
VOL. VIII.—No. 7. MANILA AND SHANGHAI, DECEMBER, 1911. 25 cents, U. S. Cy.

The Kuangtung Section of the Canton-Hankow Railway

The Chungking Electricity Works

The Honolulu Iron Works in the Far East

Mineral Resources of the Philippines



Subterranean River in Palawan, Philippine Islands.—Striking View from Interior.—Outward, Near Its Mouth, Showing Exit to Cove.

*THE KWANGTUNG SECTION OF THE CANTON-HANKOW RAILWAY

"The construction of a trunk line, connecting Hankow, or rather Wuchang, immediately opposite Hankow, on the south bank of the Yangtze, with Canton, was first advocated by Sir MacDonald Stephenson. In ever subsequent scheme for a comprehensive system of railways in China, such a line has occupied a prominent position. Yet though the necessity, or at least the desirableness, for its construction, is so great, as to be almost axiomatic, but very inconsiderable progress has as yet been made towards that end." Thus writes Mr. P. H. Kent in his able work, "Railway Enterprise in China" with reference to the Canton-Hankow Railway, and anyone, desirous of studying the history of railways in particular, can not do better than carefully peruse this book.

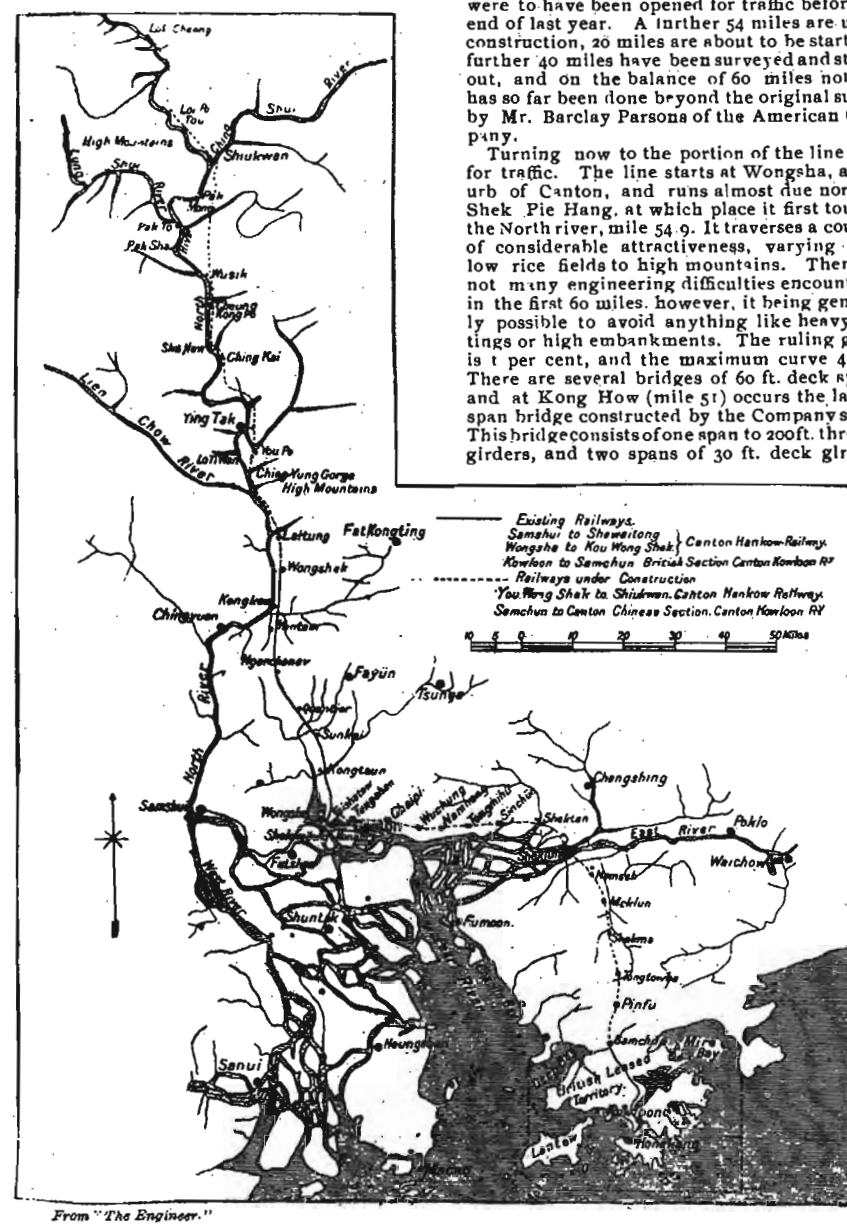
As regards the early history of this undertaking, we may say that the original concession for the construction of the whole line of over 700 miles was given to an American company—The American China Development Company. From it, it passed temporarily into the hands of the Belgians, then the Americans regained control, and, finally, it rests in the hands of the Chinese themselves. All the work that was done by the Americans was the construction to completion of the branch line from Shek Wai Tong (on the opposite or south side of the river to Canton) to Samshui on the West river, a distance of 32 miles, and the partial completion of 50 miles of earthwork on the main line northwards from Canton.

When the American Company was finally persuaded by the Chinese to retire from the field, which it eventually did upon receiving compensation to the extent of 6,750,000 dols., gold, for the work it had done and the two surveys of the main line, a Joint Stock Company was formed by Cantonese merchants, under the name of "The Kwangtung Mercantile Administration of the Yuet-Han Railway Company, Limited, to carry on the work. This Company, formed with a capital of 40,000,000 dols. Cantonese currency (about £3,636,000 sterling), intends to construct the line only through the province of Kwangtung, of which Canton is the capital, and it is with this portion only of the Canton-Hankow Railway that it is proposed to deal. Very little, if any, work has been started in the provinces north of Kwangtung and there is, in consequence, little to write about. Shares were issued of the value of 5 dols. (8s 9d.), price of the shares being so low nearly every coolie and person of the lowest classes who could muster a dollar became a shareholder, hoping thereby to obtain lucrative employment upon the line. Though there is, of course, not enough work on the line to employ all the shareholders, it is nevertheless a fact that only shareholders in the Company are employed, no others, except foreigners (who can not hold shares), being considered. In 1909, the call for the second payment on the shares of 1.50 dols. is about to be made. There will undoubtedly be trouble in collecting it. The total capital of 40,000,000 dols. is equivalent in a length of 240 miles to about £15,000 per mile, but it is proposed, when the main line is completed, to build numerous branches. The cost of the main line is estimated to be between £6,000 and £7,000 per mile.

By the rules of the Company, only a Cantonese is eligible for the appointment of Engineer-in-Chief, and also the President, Vice-Presidents, and members of the Board of Management must be Cantonese. Foreign engineers are employed under the Chinese Chief Engineer, the Company recognising that it can not do without foreign assistance in carrying out this big enterprise. At first, marked preference was given to Canadian engineers, trained on the Canadian Pacific Railway, but, latterly, all the Canadians have left and the line has become more cosmopolitan in character. At the time of writing there are nine foreign civil engineers employed, made up of different nationalities, as follows:—five Japanese, three Americans, and one Englishman, and the superintendent of motive power, who is an American, making ten foreigners in all. The Chief Storekeeper, Accountant and Secretary, are Cantonese. All drivers, guards, stationmasters, platelayers etc., are Cantonese. The head administrative offices of the Company are within the walls of the City of Canton, the workshops, engineer-in-chief's offices, etc., at Wongsha, a suburb of Canton, and the terminus of the line. The late President of the Company, Sir Liang Cheng Tung, having been appointed Ambassador at Berlin, has been succeeded, after a year's interval, by His Excellency Jeme Tien You, Consulting Engineer to the Board of Posts and Communications and a Director of the Imperial Pekin-Kalgan Railway.

Coming now to the line itself, the standard gauge of 4ft. 8½ in. has been adopted, and the length to be constructed in the Province of Kwangtung is, approximately, 240 miles, 58 5 miles are at the time of writing, open to traffic, 7.5 miles have the permanent way laid. They were to have been opened for traffic before the end of last year. A further 54 miles are under construction, 20 miles are about to be started, a further 40 miles have been surveyed and staked out, and on the balance of 60 miles nothing has so far been done beyond the original survey by Mr. Barclay Parsons of the American Company.

Turning now to the portion of the line open for traffic. The line starts at Wongsha, a suburb of Canton, and runs almost due north to Shek Pie Hang, at which place it first touches the North river, mile 54.9. It traverses a country of considerable attractiveness, varying from low rice fields to high mountains. There are not many engineering difficulties encountered in the first 60 miles, however, it being generally possible to avoid anything like heavy cuttings or high embankments. The ruling grade is 1 per cent, and the maximum curve 4 deg. There are several bridges of 60 ft. deck spans, and at Kong How (mile 51) occurs the largest span bridge constructed by the Company so far. This bridge consists of one span to 200ft. through girders, and two spans of 30 ft. deck girders.



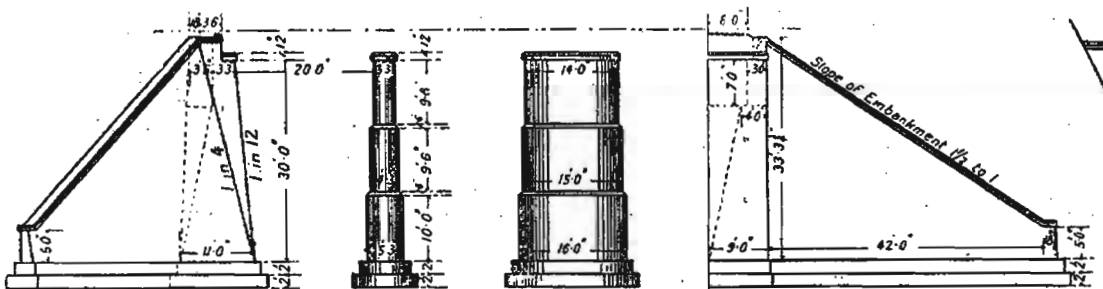
From "The Engineer."

The only drawback connected with the exploitation of this valuable coal field is the cost of building and equipping a railway to transport the coal to the coast, an approximate mileage, including sidings, of 20 miles. The cost of winning freight and general charges would be such that coal could be landed at the seaboard at a cost not exceeding 5s per ton. In comparison with the selling price of other coals, the Boeket Soenoer coal should have a clear margin of profit of not less than 5s per ton, and probably of 10s per ton which gives enormous value to the concession. It is certain that in the near future this will become one of the important centers for supplying the growing demands of the Eastern market.

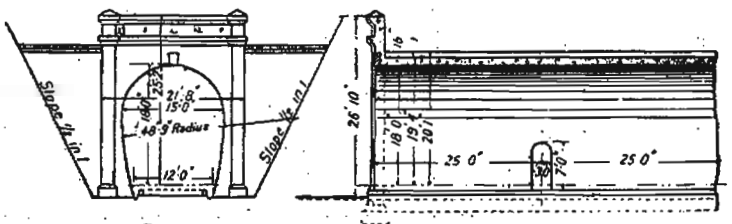
The above is a condensed extract from a report on the property by Mr. T. Parton, F. G. S., etc., of Sydney, Australia.

*From "The Engineer."

SOME TYPICAL CONSTRUCTION ON THE CANTON-HANKOW RAILWAY



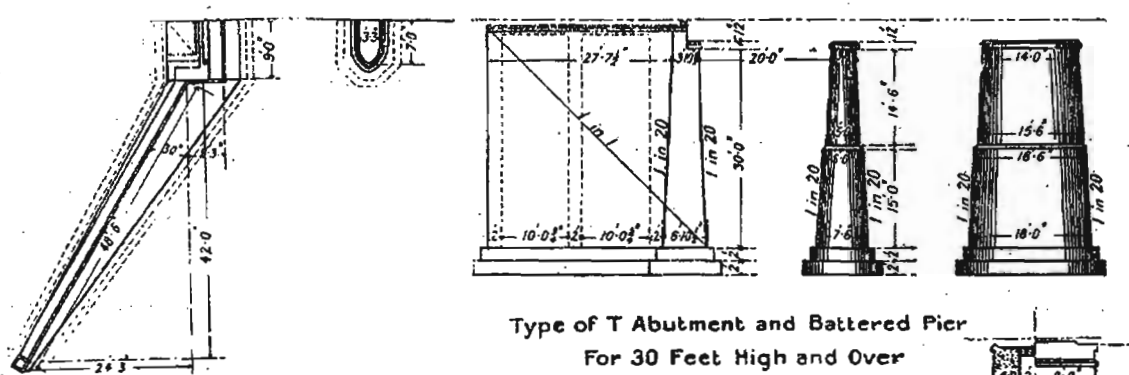
Type of Wing Wall Abutment and 30 Feet High Straight Pier.



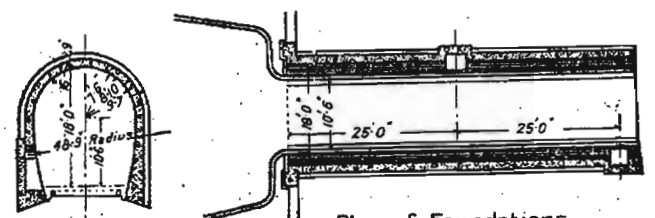
Portal

Longitudinal Section

Type of Tunnel in any Material.

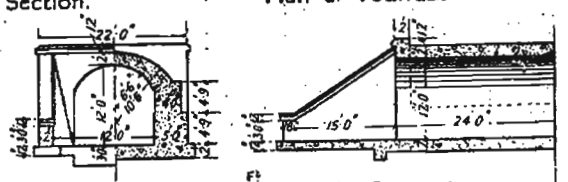


Type of T Abutment and Battered Pier
For 30 Feet High and Over

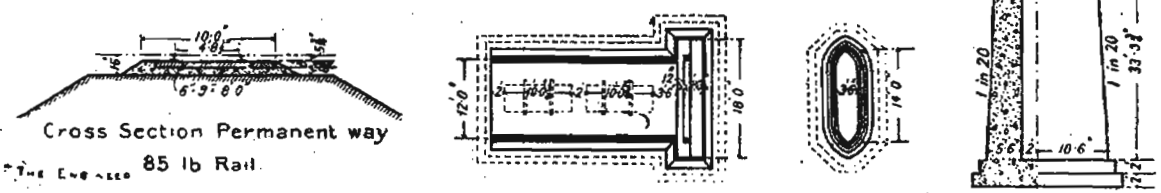


Cross Section.

Plan of Foundations.



Type of 12 Ft Arch in Concrete.



Cross Section Permanent way
85 lb Rail

The 200 ft. span is of the whipple type, and was designed by Messrs. Baker and Hurtzig, of London. The girders rest upon cement concrete piers and abutments, these being supported upon piles.

There are on the open line four bridges of one or more spans of 60 ft. deck girders, the largest being at mile 12, where there is a bridge of 15 spans of 60 ft. There are also three bridges of one span each of 40 ft. and many of 30 ft. and 20 ft. spans. All bridge piers and abutments as well as arches and small culverts are constructed of Portland Cement concrete, proportions for all work, except arch rings, being one cement, three sand, and six stone. Arch rings are of the proportion of one cement, two sand, and four stone.

The Canton district and indeed the whole of the area traversed by the railway is liable to sudden heavy flooding. The largest flood occurred in June, 1908, when there was a rise of over 30 ft in the North river. Such a flood had not been previously experienced within knowledge, and as a consequence many bridges had to be raised, formation level throughout had to be raised and in some cases an entirely new alignment of parts of the line had to be undertaken. All this, of course, occasioned much delay, but it is now practically certain that the bridges are adequate for any future floods, and that the embankments will not be topped or washed out.

On the portion of the line open for traffic, there are excluding Wongsha, the terminus, 15 stations situated at an average distance of 3.9 miles apart. At all these stations loop lines are provided for crossing trains. Otherwise the line is single throughout. There are no signals in use, and no locks provided on either facing or trailing points. There is no proper block system. Permission to proceed from station to station is given by the station master to the driver and guard, after the former has first ascertained, from the station in advance that the line is clear, and has received permission to despatch the train. On the train leaving the station, the station ahead is advised by telephone, and the driver of the train is given a tablet which he delivers on arrival at the next station. Without a tablet no train can leave a station. All points over which the trains are to run are manned by pointsmen.

At Wongsha, which is on the north side of the Canton river, the Company owns about 500 lineal feet of wharfage, and ocean-going ships of light draft can come alongside at high tide and discharge direct on to the Company's land. As it is intended to connect the line with the Canton-Kowloon Railway, now also under construction considerations of the final designs for the Wongsha terminus are as yet deferred, and the station can only be considered as a temporary one at present. On the open line there is at present no goods traffic whatever, the short length of line open to traffic not warranting consignors from transferring their merchandise from the river to the train, and incurring the expense of double handling, when they can get boats to take their goods right to their wharves in Canton. Time being of little object to the Chinese, the three days taken by boat to Canton do not weigh with them so much as the expense of double handling, and until the line has got to a distance of 150 or so miles from Canton, it is not thought that the amount of goods traffic will be worth considering. On the other hand there is a heavy passenger traffic, principally third class, to cope with which there are at present five trains running daily each way, Sundays included.

The Chinese are inordinately fond of travelling and do not object to paying for the privilege. With regard to passenger fares the rates from Wongsha to Kou Wong Shek, the present end of the open portion, are as follows: third-class single, .85 dols.; second-class, single 1.55 dols.; for first class, single 2.55 dols. For a distance of 58 5 miles this is equivalent to—for third-class .3 pence per mile; for second-class, .55 pence per mile, and for first-class, .93 pence per mile. These prices for travelling compare favourably with any other railway from the passengers' point of view. There is no doubt, however, that as soon as the public have found it a necessity to use the train for travelling, and have become used to it, passenger fares will be raised all round.

Passengers, who now desire to proceed from Kou Wong Shek to places higher up the river, take passenger stern-wheel steamers which meet the first train from Wongsha. These steamers, which do not belong to the Railway Company, make the large town of Ying Tak, at mile 85, the same day. To Shiukwan, however, situated at mile 140, and the most important town touched by the main line, it is sometimes possible to obtain a steamer, in which case passengers arrive in two or three days from Canton, but more generally, on account of low water in the river, native flat-bottomed boats have to be taken from Ying Tak, in which case four to six days can easily be taken on the journey from Ying Tak, or five to seven days in all from Canton.

All stations are constructed of red brick set in lime, and besides providing the usual offices and waiting rooms, have an ample overhanging verandah on the platform, and quarters for the station master, telegraph operator and pointsmen. Platform walls are of concrete 14 in. above the rail level, and have a ramp of 1 in 5 at the ends. The road bed is well ballasted, having a minimum of 6 in. of good stone under the sleepers. Sleepers are of Jarrah wood obtained from Australia.

The rails which are flat bottomed are of 85 lb. per yard section, and are obtained, together with all fastenings, from the Hanyang Iron and Steel Works, a Chinese concern at Hankow.

Locomotives, of which there are 25, are all of American make, the American Locomotive Company being responsible for most of them. The heaviest engines, type E, weigh with tender, 238,000 lb., or 106 tons English, and are of the 2-6-0 type with a double four-wheeled bogie tender. The diameter of the driving wheels is 56 in., that of the leading wheel, 33 in., and of the bogie wheels on the tender, 33 in. The weight on each pair of the coupled driving wheels is 35,000 lb., or 15-6 tons English. The rigid wheel base of the engine is 14 ft. The cylinders are 19 in. diameter by 26 in. stroke, the boiler pressure being 180 lb. The heating surface is 2,020 sq. ft., and grate area, 30.3 sq. ft. The water capacity of the tender is 5,000 gallons, and the coal capacity nine tons. The tractive power on the draw-bar is 24,100 lb. The fuel used is Japanese coal of rather poor quality.

The rolling stock at present on the line consists of the following:

No.	Nature	Dimensions.	Capacity.
2	Directors' cars	60′×9′×10′6″	
7	1st & 2nd Compos	60′×9′×10′6″	34, 1st; 22, 2nd.
10	2nd class "	60′×9′×10′5″	60
20	3rd class "	60′×9′×10′6″	96
	Coaches are 26 tons tare.		
2	Baggage cars	40′×9′×10′6″	30 tons net.

GOODS STOCK.

2	Goods cars	..32′×9′ 8″	30 tons net
18	Flat wood cars	.36′×10′	30 " "
20	High side "	..60′×10′	30 " "
130	Low side	..32′×10′×2′6″	30 " "
6	Steel Goods,	..32′×10′×2′	
4	Steel brake vans.		

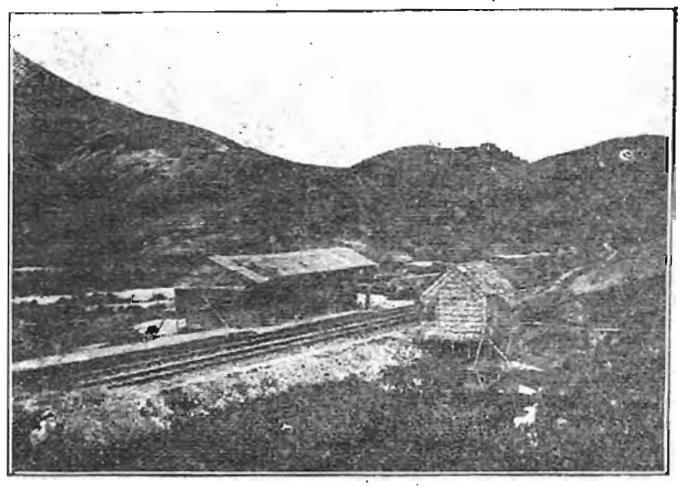
All the rolling stock has centre buffers and automatic couplers of the Master Car Builders pattern, and all vehicles, whether goods or passenger, are fitted with the Westinghouse automatic brake.

Turning now to that portion of the line under construction, permanent way, unballasted, is laid as far as mile 67. As already mentioned the line joins the North river at mile 54.9. From this point onwards the work becomes of a much more interesting character from an engineering, as well as from a scenic, point of view. High hills come right down to the water's edge, and the work is a succession of cuttings through the ridges of these hills and filling up the valleys between the ridges. The gradients are very easy, generally, the line rising from 15ft. above mean sea level at Wongsha to 310ft. above the same datum at Shiukwan bridge, mile 140.

At mile 66 occurs the first tunnel which is completed and about to be opened. It is only some 270 ft. long, and is through hard sandstone, which had to be blasted. It is nevertheless lined with concrete 18 in. thick down to 2 ft. below formation level. Two engravings of this tunnel, one during construction and the other after completion, are given on this page. The cost of this tunnel is given as 148 dols. per lineal foot, equivalent to £12 19s. sterling. We cannot, however, vouch for the accuracy of this figure.

As already mentioned, the formation level of all cuttings and embankments had to be raised after the experience gained during the

CONCRETING TURNTABLE AT WONGSHA



TEMPORARY STATION AT TAI KAN KIU

terrible floo ls of June, 1908. This was a source of great delay in carrying on construction, but there are other and worse delays, caused by the Chinese landowners on the right of way. On account of some peculiar god or devil which a certain hill or piece of ground is supposed to harbour, no inducement will make the owner sell that land, and many and grave troubles have been encountered, some of which are still going on and have been for two or three years. For instance, at mile 68, there is a stretch of land of very short length upon which is situated the grave of the head villager's mother. As a general rule graves on the right of way afford very little obstruction, it being the practice of the Railway Company to pay 6 dols. to the nearest relative of the deceased, who then exhumes the remains, puts them in a large earthenware jar, and either reburies it or stands it on the hill side clear of the line of works. In this case, however, strong opposition has been offered, the head man, who is very wealthy even go-

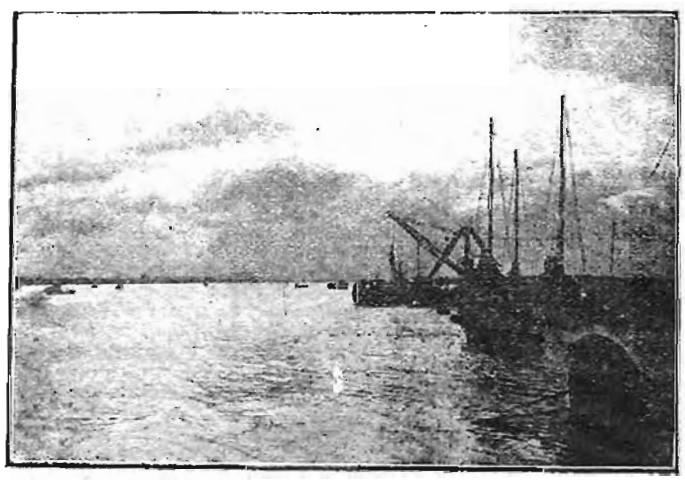
fact that the first pier together with the two abutments, has been partially completed, and it is desired to utilize these structures in the new design. The 200 ft. span piers will be founded upon steel wells, these latter now being made by the Company at Wongsha. The 50 ft. piers will be founded upon piles driven in cofferdams.

It is not in contemplation to use compressed air for the well sinking, but there is little doubt that eventually it will have to be used. The nature of the substrata is a matter of considerable uncertainty in the case of this bridge; the Company never having made adequate borings to ascertain this most vital point. It is conjectured that underlying the surface sand and small stones, good stiff clay will be met with at a depth of 30ft. or so below low-water level, and upon this conjecture the foundations of the bridge have been designed. It is extremely probable from one or two indications that have become manifest that large boulders are likely

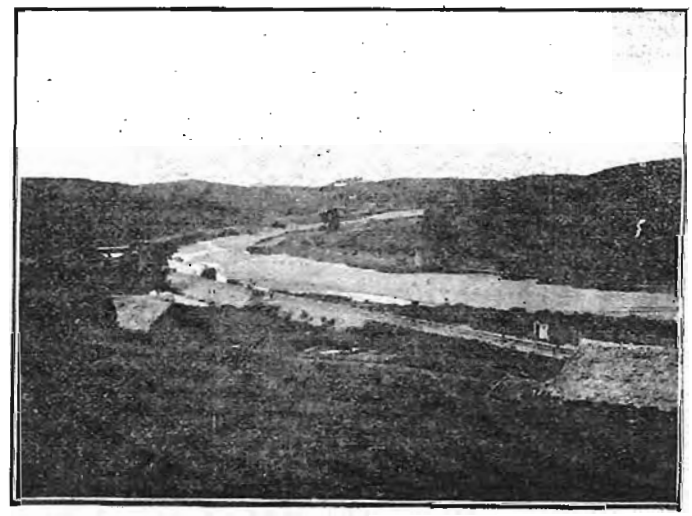
each contractor a small culvert first, to discover his capabilities, before letting him have any other work, and, consequently, while the capabilities are being proved on these small culverts, there are many large culverts and bridges still untouched.

Bridge work contractors are required to be responsible for the bridges they build for a period of 12 months from date of completion. This is a sound clause in the contract where concrete work is concerned, as it undoubtedly has deterred many inferior and inexperienced contractors from coming forward, but it, of course, does not relieve the engineer of the very arduous work of personal supervision of every bridge constructed.

Up to the time of company work on bridges, cement manufactured near Hong-Kong by a foreign company, and known as "Green Island" cement, was almost invariably used. A little German cement (Alsen brand) had been used for foundations under water, and for arch rings,



THE NEW RAILWAY WHARF AT WONGSHA



SOUTH FROM TAI KAN KIU

ng to Peking to lay the matter before the Throne. In the end, force will undoubtedly have to be used, though the Company recognises that this is only a last resource.

At mile 83 also, even graver obstruction is offered. In this case three villages have combined to prevent the Railway Company buying any of their land, and it is quite possible that very serious bloodshed will occur here before the villagers are forced to give way. These villagers prevent all work proceeding, even work of quite a preliminary nature, threatening the engineer and his staff, and obliging them to withdraw. In this case there are no graves in question, the villagers object to the line passing so near their villages (about 30 ft.) and have indicated the one and only line they will accept. This their line is over 1,000 ft. away from the present centre line and quite impracticable from an engineering point of view, matters are at a deadlock.

From mile 55 the line runs parallel with the North river, leaving it between miles 78 and 97, running parallel to mile 120, and from here striking well inland until it again joins the river at Shiukwan, mile 140. Between miles 75 and 78, the line runs through a precipitous, rocky gorge of the river, and on this length which is so far the heaviest portion undertaken, there are three short tunnels of 300 ft., 150 ft. and 200 ft. length respectively. All these tunnels are through rock, and all will be lined to below formation level with concrete.

The bridge at mile 85 is 750 ft. long, and it was originally proposed to build 13 spans of 60 ft. deck girder. Considerable difficulty, however, was experienced in driving the foundation piles in some of the piers, and the original design has been abandoned in favour of three spans of 200 ft. through girders, two spans of 150 ft. and one span of 50ft. deck girders. This peculiar arrangement is accounted for by the

to be encountered during the well sinking, and these may be so large and so numerous that compressed air will have to be resorted to. Tenders for the entire construction of this bridge have been called for, but have so far met with a poor response, Chinese contractors probably not feeling competent enough, or willing to take the undoubtedly big risks attending such a work. No foreigner can submit a tender for any work upon the line, though it is true that there are one or two foreigners—Italian and French—who are employed by the Chinese as sub-contractors.

To mile 106 there is very little of any engineering importance to recount. Earthwork is proceeding steadily, but very little bridge work is in hand, in fact, between miles 70 and 120 no bridge work whatever is going on. There are several reasons for this peculiar state of affairs. Originally, all bridges of whatever size, were constructed by the Company itself, contractors only furnishing the necessary sand and stone for the concrete. This method of departmental working proved exceedingly expensive, as on many occasions the supply of cement gave out at a critical period during the construction of the bridge; but labour gangs and foremen had to be retained ready for the arrival of a fresh supply of cement. In March last year, however, the practice of using departmental labour was stopped by order from Peking and work by contract ordered instead.

Owing to the very small number of contractors in South China familiar with and experienced in the correct methods of mixing concrete, putting up shuttering, etc., it has been, and still is, a matter of great difficulty to get good men. A small body of these contractors, and the same small body invariably, submit tenders for bridges when they are advertised, and as nothing is known of these men or their capabilities it has been wisely decided to give

but its use has been abandoned. A Chinese company has built a cement works in Canton, and the Railway Company intends to utilize this cement exclusively in future structures on the principle of supporting home industries. As to the quality of the Chinese cement it is a little early to form any opinion. Stone supplied for concrete is an excellent quality of limestone, of which the hills bordering the line provided unlimited quantities. The size for concrete is 1 in. to 1½ in. Sand is obtained from the river, in many cases within 20 ft. of the work for which it is required. The sand generally is of an uniform excellent quality. Foundations for bridges are generally piled, even the smallest culverts having as many piles as can be conveniently driven. Probably no works of a similar nature anywhere have gone in so strongly for piled foundations.

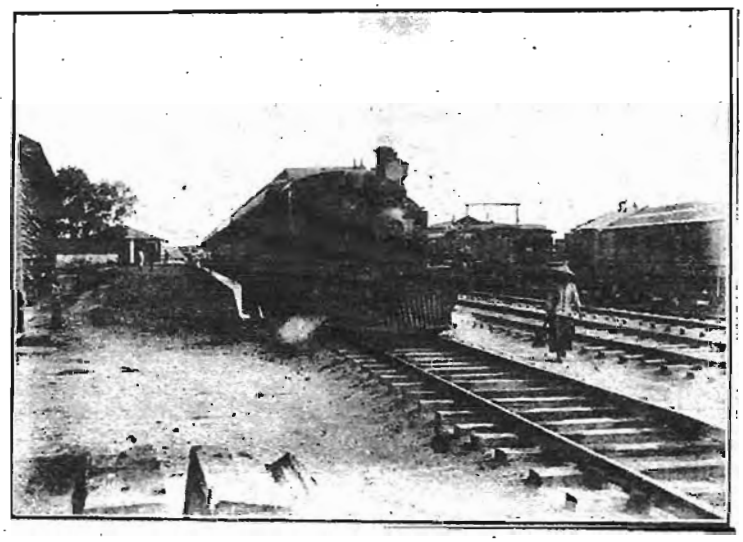
At mile 140 the east fork of the North river is crossed by the line of railway. The width of crossing here is 800 ft., and it is proposed to carry the line over by means of four spans of 200 ft. through girders. No difficulty in the construction of this bridge is anticipated. At an average depth of 25 ft. below the surface of the bed, limestone rock in a level stratum is found, and it is proposed to sink steel cylinders on to this rock in the case of two of the piers. The remaining pier and two abutments will have open foundations. No tenders for this bridge have so far been called for, as the Company intends to complete the line open for traffic to Shiukwan (mile 139 ½) before proceeding further with construction of any sort.

Shiukwan is a city of 60,000 inhabitants and is the principal place in Kwangtung touched by the main line. A large passenger traffic is anticipated from here and from the surrounding small towns and villages.

For the purposes of construction the line is divided up into sections of ten miles each, in

charge of which is a resident engineer, whose quarters are placed as nearly as possible in the middle of his section. He is provided with a paymaster who is responsible for the financial matters, a clerk, storekeeper, and interpreter. This latter individual is very necessary, as it is next to impossible for any foreigner to learn the Chinese language without giving two years exclusively to the study of it, which, in the case of an engineer, is impossible. The resident engineer is also provided with a guard of from 12 to 20 soldiers, who are under a captain, and who are armed with old pattern, but serviceable, Mauser rifles. This guard is at times a necessity in cases of trouble with villagers, and though the soldiers are not soldiers in anything but in name, being recruited from villagers themselves, they are as a rule loyal to the engineer, and can be trusted to protect him in cases of trouble, since failure to do so means decapitation.

The engineer, in order to get about his section, is, in cases where there is a road, provided with a pony, his interpreter and Chinese assistant engineer also having ponies. In cases where the section runs alongside the river, a small motor launch burning petroleum is provided for him to get from one end of his section to the other. His quarters are constructed of wood and consist of one or two bedrooms, dining room and office. Fireplaces are a necessity, as from December until the end of March bitterly cold winds blow from the north across the great Gobi desert. The sun is seldom seen during these months, the sky being heavily overcast, though there is little or no rain. In March last year here was slight frost at Shiukwan for several nights.



TRAIN AT WONGSHA

The months of July, August, and September are hot, but on the whole the climate is very good, and sickness amongst foreigners rare. There are mosquitoes, and consequently malaria, but not of a serious kind. Living is exceptionally cheap—chickens, eggs, ducks, pheasants and partridges being abundant. Vegetables of all sorts are plentiful, but are seldom eaten by foreigners owing to the peculiar methods of cultivation adopted by the Chinese.

Coming now to the cost of construction: for earthwork, the company advertises in the Chinese newspapers that such and such a section containing so many cubic yards in embankments and cuttings is to let, the tenderers being asked to name a lump sum for which they will do the whole section. Generally, into the lowest of such lump sums received in reply the number of cubic yards of earthwork is divided, and the successful contractor is told he can proceed with the work at the resulting price per cubic yard.

For all soils except rock he is paid this amount per cubic yard, but for rock he is paid 1 dol. per cubic yard, the Company supplying him with explosives if blasting is necessary.

As the contractor is paid for all earthwork in both cuttings and banks it is obvious that the longer the distance he can get his coolies to lead excavated soil from cutting without payment, the greater profit to himself on the contract. If the work is sufficiently big to warrant him buying or hiring temporary small gauge track with tip wagons, his profits increase at a great rate. In some cases earth from cuttings has been led a distance of three quarters of a mile, the contractor paying his coolies only the cutting rate. In cases where opening for bridges have to be lef in an embankment temporary bamboo bridges are put up and the small gauge track carried across it.

The quantity of earthwork in a section of 10 miles varies between 700,000 to 1,250,000 cubic yards of cutting and embankment. Of these amounts about 10 to 30 per cent. are rock. The prices for earthwork obtained by the method mentioned above have varied between 10 cents to 15 cents per cubic yard, the higher price being for through cuttings (2.1 to 3.15 pence per cubic yard). Prices for bridge work are as follows: cement delivered by the Company into its section storehouses varies from 4.80 dols. to 5.50 dols. per barrel of 375 lb., depending, of course, on the distance it has to be carried from Canton. Sand for concrete ranges between 6 dols. to 14 dols. per ching of 7 cubic yards. The latter price is for cases where the sand has to be carried in baskets by coolies over perhaps two or three miles of rice fields to the bridge site. Broken limestone varies from 11 dols to 23 dols. per ching for the same reason. The prices paid to contractors for labour only in bridge work, that is, labour in mixing, depositing and ramming concrete, as well as putting up and taking down shuttering, have varied from 1.25 dols. to 1.65 dols per cubic yard, and for specially large and high piers up to 2 dols. per cubic yard. Very careful supervision by the resident engineer in person has been necessary when this method of bridge construction has been in force.

Now, according to the new system adopted since March last year, contractors take over the whole work of construction, and provide all materials including cement, but not the shuttering. In addition, as already mentioned, the contractor takes all responsibility for the bridge he has constructed for a period of twelve months from the date of completion. The average price submitted by contractors to date for minor bridges up to 20 ft. span and small culverts has been 52 cents per cubic foot, equivalent to 14 04 dols. per cubic yard, or 24s. 6d. English. For larger bridges the price has been 17 dols. per cubic yard and for the Ying Tak and Shiukwan bridges it will, of course, be much higher, probably 24 dols. to 30 dols. per cubic yard.

The exclusive use of cement concrete for bridge construction is open to some criticism. Excellent limestone in unlimited quantities exists practically all along the railway, and never more than one or one-and-a-half miles away.

In former times the Chinese built all their bridges—of which there are numbers along the river banks—solely of this limestone, and the excellent workmanship in the arch rings proves that they possessed considerable skill in dressing the stone. Single spans of 16 ft. in one slab of limestone exist in many places.

On the other hand, it is said that any coolie can be easily and quickly trained to mix concrete, and this being so, the Company would not be in the hands of the stonemasons, as it would be if masonry for bridges was adopted. It is also contended that concrete is cheaper than masonry. This may be true for places close to Canton, but is not so at places further away, the cost of cement transportation being very high after the first 30 miles from rail head. A good quality of lime is, however, made by nearly every village for its own uses, and there seems no reason why the Company should not use this lime for stonemasonry work, if necessary using cement for the face joints.

Nearly all native houses in this part of China are built of brick in lime. These bricks are of nearly the English size 9 in. × 4 ½ in. × 3 in., and make very neat work. They are of a blue colour, and are generally under burnt. This defect could easily be remedied, and there appears to be no reason whatever why these bricks should not be used for small arch culverts and minor bridges. The price of these local bricks is 7 dols. per thousand.

The excessive width of formation in cuttings seems also open to criticism. The width of 24 ft. for a single line is made up as follows: 18 ft., the standard formation width, plus twice 3 ft., the width at top of the side trains. Even in solid rock cuttings this width of formation is maintained. The one and only apparent reason for this width is that the railway will be, and indeed now is, used extensively by foot passengers as a highway, and this extra width is given to give them clear room away from moving trains. If this be the reason, however, it would seem necessary to widen the embankment to 24 ft. also, instead of the standard of eighteen.

With regard to wages given for day labour by the railway, these vary from 35 cents to 40 cents per day for ordinary labourers, depending upon locality. For interpreters, clerks, foremen, and storekeepers, the pay averages 40 dols. to 50 dols. a month; and for survey coolies from 18 dols. to 12 dols. a month.

With regard to Chinese foremen, very few are competent to supervise alone the construction in concrete of any but the smallest bridges, and a fewer number still can be classed as trustworthy and honest. As illustrating the untrustworthiness of foremen and Chinese contractors, it is related of a certain foreign engineer, who left the work of piling the foundations of a large bridge to the supervision of a Chinese foreman that on being advised by this foreman that the work had been completed, he noticed the, in what seemed to him, remarkably short time the work had been done Going down to inspect the work, preparatory to ordering the concreting to begin, he noticed when walking over the pile heads that many of them seemed loose. As these piles were supposed to be 30 ft. to 40 ft. in the ground, he ordered the foreman to draw one for inspection. He then discovered that every pile had been cut off to a length of 4 ft. to 5 ft., and the remainder of the length carefully hidden away Needless to say the foreman lost his appointment that instant.

With regard to Chinese engineers there are undoubtedly men of great ability amongst them. The present Chief Engineer of this line, Mr. Kwong King Yang, is a man of high professional attainments. Unfortunately, few men of his calibre are available in South China. The Northern Country Chinese do not like working in the climate of South China, and the South Country Chinese do not go to the engineering university in the North for a similar reason. The Company has several young men employed as assistants to foreign resident engineers, and some of them are turning out well, but it will

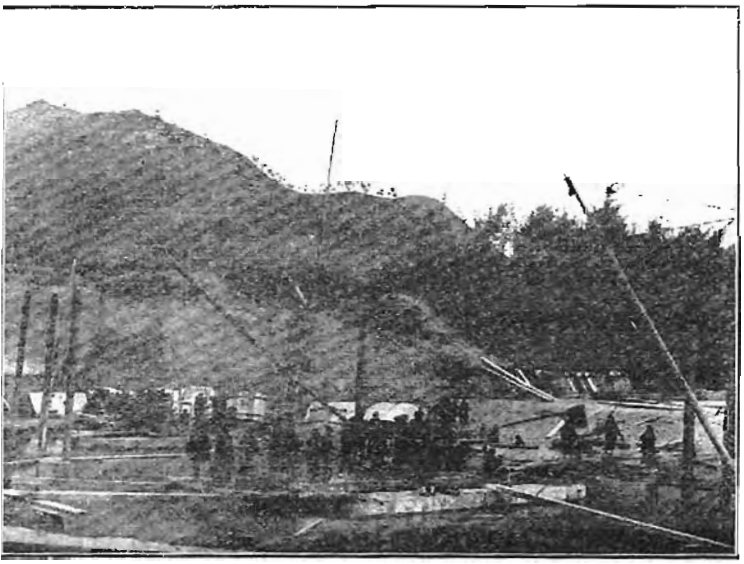
be a long time, at any rate in South China, before the help of foreign engineers can be entirely dispensed with. These young Chinese assistants are generally excellently well trained from a theoretical point of view, but lack any practical experience or training. They show exceptional keenness in learning, however, and keep note-books constantly with them when on

quite a probability. Beyond mile 180 very heavy rockwork is known to exist, and means of transporting materials are very bad.

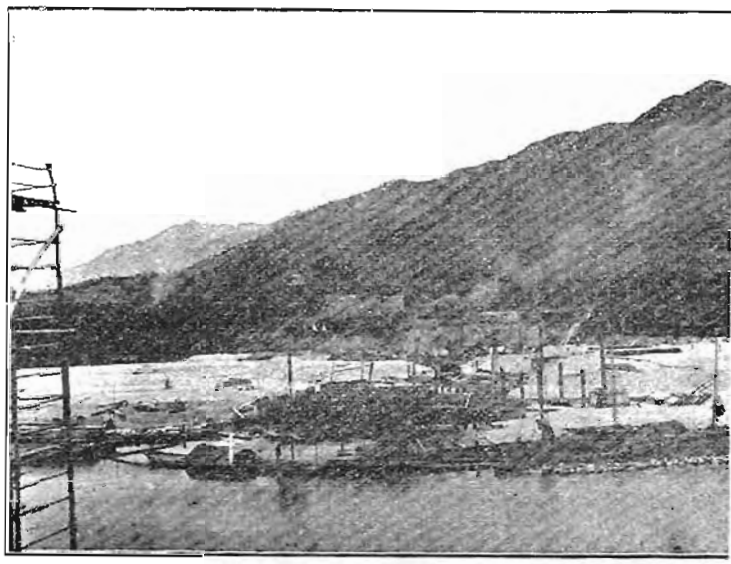
That the railway when completed will prove an inestimable boon to the inhabitants of South China, can not be doubted, and as a means of opening up the interior of Kwangtung to mining and other enterprises, ist final and sucsces-

minus station building which is in course of construction. In Canton, a 70-foot turntable of Sellers' pattern is provided, as also workshops and electric plant adequate to the requirements of the railway.

"Work has been started as far as the 160th mile. Three tunnels aggregating to nearly one thousand feet, just a few miles ahead of the



SINKING CURB IS IN PROGRESS BY DREDGING SAND AND GRAVEL EMPLOYING CHINESE METHODS ON THE KWANG-TUNG YUET-HAN RAILWAY.



THE YING TAK BRIDGE ON THE KWANG-TUNG YUET-HAN RY.—ONE OF THE CURBS READY TO BE SUNK.

practical work. Most of them study American methods of construction and read American books. With regard to the treatment of foreign engineers by their Chinese employers, nothing but praise can be given. They are well looked after and protected, and are consulted freely as regards the various problems that arise in the work.

Looking now at the prospects of this railway from an earning point of view, so far there are no indications of any revenue to the Company. Not much in the way of goods traffic can be expected until the line is open to Shiukwan, when there may be considerable coal traffic developed. It is, however, not until through connection between Peking and Hongkong is established that any cons derable goods traffic will accrue. As this is not likely to occur for quite ten years yet, not much more on this subject need be said.

This Company cannot complete its portion of the Canton Hankow railway for quite seven more years, and even this period can be looked upon as optimistic. Ten or twelve years is

ful completion is a consummation devoutly to be wished for.

LATER INFORMATION

The following data under date of November 22 on the progress of the w rk to date has been made available through the courtesy of the President and Engineer-in-chief of the Company, H. E. Jeme Tien Yew:

"Of the total length of 209 miles in this part of the Canton-Hankow Railway, 58.5 miles were completed and opened to traffic up to the end of the last year and another 7.25 miles have lately been added to the open line, making up a total of 65.75 miles. The line has thus far passed through the low-lying country, crossing a large number of minor bridges and culverts, except towards the railhead where there is heavy rock-cutting and a tunnel about 230 ft. long. Permanent station buildings, track houses and water tanks have been built along the open line with the exception of the Canton ter-

railhead, have already been completed. A big bridge at Yingtak, some 90 miles from Canton, consisting of 3-200 ft. spans, 1-60 ft., 1-50 ft. and 1-45 ft. span, is very near its completion. Some of the minor bridges have been finished while others are well under construction. Another big bridge spanning 760 ft. in the 150th mile and a tunnel abont 1,000 ft. long in the 160th mile have just been made a start of.

"The northern end of the line has been surveyed and located up to the boundary of Hunan province, but work has not yet been started. The line towards that end runs chiefly through mountainous regions where there will be more than sixty tunnels aggregating to over ten thousand feet. It is estimated that this portion alone will require no less than 9,000,000 Mex. dollars to finish, while this, together with the work now in hand, will cost the Ry. Co. something like 16,000,000 Mex. dollars for completion which will take about four years provided facilities are afforded to the working system."

ACTIVITY OF THE HONOLULU IRON WORKS IN THE FAR EAST

Formosa.—During the past five years Honolulu Iron Works Co. have constructed and reconstructed seven cane sugar factories in Formosa, varying in capacity from 650 tons of cane per diem to 2,800 to 3000 tons of cane. Six of these factories are for the Taiwan Seito Kabushiki Kaisha (Formosan Sugar Manufacturing Co. Ltd.) and one for the Meiji Seito Kabushiki Kaisha. The factory for Meiji was shipped in Oct. of this year and has a daily capacity of 1,000 tons of cane.

All of the Taiwan Seito Co.'s factories are equipped with twelve roller mills of the very latest construction and design, having quadruple effect evaporators, central condensers and crystalizers. The buildings are all of steel and built for 150 mills solid pressure per hour. All the factories are operated on the gravity system, the boiling houses being four floors in height so that the liquor is pumped once only to the upper or vacuum pan floor and then drops by gravity from pans to crystalizers, thence to centrifugals without subsequent handling. This is standard type of factory as installed in recent years in the Hawaiian Islands and elsewhere. It eliminates elevators and pumps for handling the products to the greatest extent possible, saving labor and attention.

The bagasse from the mills is delivered direct to furnaces automatically so that the fresh cane and bagasse is not touched by hand.

The largest factory installed in Formosa by Honolulu Iron Works Co. is Ako, with capacity of from 2800 to 3000 tons of cane per diem. A description of this factory will serve for all the others. Ako is equipped with the following machinery:

Two 34″×78″ 12-roller mills with Krajewski crushers, fourteen boilers 7×20 feet, all with automatic bagasse feed, requiring no extra fuel if worked uninterruptedly, six vacuum pans, two quadruple effect Lillie evaporators with an aggregate capacity of 2800 tons of juice, thirty-two crystalizers, thirty-two 40″ centrifugals. This, with the exception of the Guanica central in P. R. and Chaparra—factory in Cuba is probably the largest cane sugar factory in the world.

Philippine Mindoro Development Co.'s Factory—Perhaps the most interesting development in the Philippine sugar industry is the plant now in course of erection on Island of Mindoro for the Mindoro Company on what is known as the San José estate. This factory will be fitted most complete in every particular with the latest type of machinery. The buildings are all of heavy steel construction and of sufficient size to accommodate machinery to subsequently handle 1600 tons of cane in 24 hours with one crushing plant.

The plant as at present equipped will have machinery for 1000 tons of cane in 24 hours and will be enlarged as requirements demand. The crushing plant is a 9-roller mill arranged for one additional unit with Krajewski crusher. The rolls of the mill are 36 inches in diameter by 84 inches in length Vacuum pans are of "express" type, each having capacity of twenty tons of dry sugar per strike. Crystalizers are of a capacity to suit the vacuum pans. Centrifugals are 40″ in diameter and are electrically driven. Evaporator, of which there is one in-

Supplement to
THE FAR EASTERN REVIEW
August, Nineteen Hundred and Eleven

Hukuang Imperial Government Railways

FINAL AGREEMENT

THIS AGREEMENT is made at Peking on the twenty second day of the fourth month of the Third year of the Emperor Hsuan T'ung, corresponding to the twentieth day of May, One thousand nine hundred and eleven, Western Calendar, and the Contracting Parties are:

His Excellency the Kung-Pao Sheng Hsuan-Huai, Minister of Posts and Communications, duly authorized by Imperial Decree to act on behalf of the Imperial Government of China, of the one part, and

The Deutsch-Asiatische Bank,

The Hongkong & Shanghai Banking Corporation,

The Banque de l'Indo-Chine, and

Messrs. J. P. Morgan & Company, Messrs. Kuhn, Loeb & Company,

The First National Bank, and The National City Bank, all of New York, constituting the American Group, hereinafter called the "Banks" of the other part,

Witnesseth as follows:

ARTICLE I.

The Imperial Government of hina authorizes the Banks to issue a Five per cent Gold Loan for an amount of Six Million Pounds Sterling (£6,000,000). The Loan shall be of the date on which the bonds are issued to the public, and shall be called "The Imperial Chinese Government Five Per Cent Hukuang Railways Sinking Fund Gold Loan of 1911."

ARTICLE II.

This Loan is designed to provide capital, first.—

For the redemption at a premium of Two and one-half per cent, with accrued interest, of certain unredeemed Gold Bonds of the total par value of Dollars Two million two hundred and twenty-two thousand United States Currency, (G $2,222,000) issued by The American China Development Company on behalf of the Imperial Chinese Government, and secondly—

For the construction of a Government railway main line from Wuchang, the capital of the Hupei Province, through Yo-chou and Chang-sha, the capital of the Hunan Province, to a point in the District of Yi-chang-hsien in the Prefecture of Ch'en-chou on the southern boundary of Hunan, connecting with the Kuang-tung section of the Canton-Hankow Railway line, the total length of this line, hereinafter known as "The Hupei-Hunan Section of the Canton-Hankow Railway line," being an estimated distance of 1,800 Chinese li, or 900 kilometres, and of

A Government railway main line from a point at or near Kuangshui in the Province of Hupei, connecting with the Peking Hankow Railway line and passing through Hsiang-yang, and Chingmenchou to Ichang, an estimated distance of 1,200 Chinese li, or 600 kilometres, and from Ichang to Kueichoufu in the Province of Szechuan, an estimated distance of 600 Chinese li, or 300 kilometres,—this latter section of the main line having been added in substitution for the branch line from Chingmenchou to Hanyang originally agreed upon,—the total length of this main line, hereinafter known as "The Hupei Section of the Szechuan-Hankow Railway line" being about 1,800 Chinese li, or 900 kilometres.

The survey lines shall be open to revision by the Ministry of Posts and Communications.

The Chinese Imperial Government undertakes to call in, after having received from the Banks application in writing to do so, the aforesaid Gold Bonds, and the Banks will apply the amount necessary for the said redemption out of the proceeds of the Loan, and will deliver the redeemed Bonds to the Chinese Government after having made the Bonds valueless. The Chinese Imperial Government will, after receipt of the redeemed Bonds, cancel the inscription of the pledge of the Canton-Hankow Railway Line in their archives, and will advise the Banks in writing after having done this.

It is understood that any surplus of the nominal amount of Five hundred thousand pounds Sterling (£500,000) hereby allotted for the redemption of the Gold Bonds issued by the American China Development Company, aforesaid, which may remain after complete redemption of those bonds, shall be allotted to the above named Railway Lines.

ARTICLE III.

After deduction of the amount required for the redemption of the Gold Bonds referred to in Article II of this Agreement, the balance of the Loan proceeds shall be solely devoted to the construction of the aforesaid railway lines, including the purchase of land, rolling stock and other equipment, and to the working of the lines, and to payment of interest on the Loan during the period of construction, which is estimated at three years from the actual beginning of the works, a longer period, however, being allowed for the completion of the section from Ichang to Kuei-choufu in consideration of the engineering difficulties to be encountered. Work shall be commenced simultaneously at Wu-chang, Chang-sha, Kuang-shui and Ichang within six months after this Agreement has been signed, within which period the Banks shall notify the Ministry of Posts and Communications that the sum of Six Hundred Thousand Pounds Sterling (£600,000) has been placed at its disposal, in case funds should be required for survey or construction purposes, or for ordering of materials, and for the resumption by the Imperial Chinese Government of the portion of these lines already constructed by the Provinces concerned, the said sum to be held in Europe and/or in the United States of America or remitted to China as the Ministry may direct as a first instalment on account of the proceeds of the Loan. This amount of £600,000, or whatever portion thereof is actually advanced, together with interest thereon at the rate of six per cent per annum, shall be deducted from the first proceeds of the sale of the bonds.

It is understood that the lines of railway already constructed by the two provinces of Hupei and Hunan prior to the signature of this Agreement with capital provided by those Provinces themselves, together with the property of those two provincial railways shall henceforward be taken over by and incorporated in the Canton-Hankow and the Szechuan-Hankow Government Railways Administration, and further that any supplementary funds which may be furnished in the future by the Ministry of Posts and Communications on account of a deficiency in the amount required for the construction of the Canton-Hankow and Szechuan-Hankow main lines within the boundaries of the two Provinces of Hupei and Hunan, as provided for in Article XV of the present Agreement, shall also rank as capital of the Canton-Hankow and Szechuan-Hankow Railway main lines within the boundaries of the two Provinces aforesaid. But the returns due upon such capital shall not in any manner impair the arrangements for payment of interest and repayment of principal of the present Loan.

ARTICLE IV

The rate of interest for the Loan shall be Five per cent per annum on the nominal principal, and shall be paid to the bond-

holders half-yearly. The said interest shall be calculated from the date on which the Loan is issued to the public, and shall be paid by the Imperial Chinese Government during the time of construction either from the proceeds of the Loan or from other sources, and afterwards, in the first place, out of the revenues of the railways, and then from such other revenues as the Chinese Government may think fit to use for the purpose, in half yearly instalments according to the amounts specified in the Schedule attached to this Agreement, and twelve days before their due dates, Western Calendar, as calculated half-yearly from the date on which the Loan is issued to the public.

ARTICLE V.

The term of the Loan shall be Forty Years. Repayment of Principal shall commence after the expiry of Ten years from the date of the Loan and except as provided in Article VI hereiuafter, shall be made by yearly amortization to the Banks in half-yearly instalments out of the revenues of the liues, or such other revenues as the Chinese Government may think fit to use for the purpose, according to the amounts specified in the Schedule attached to this Agreement, but twelve days before their due dates, Western Calendar, as calculated half-yearly from the date on which the loan is issued to the public.

ARTICLE VI.

If at any time after the lapse of Ten years from the date of the Loan the Imperial Chinese Government should desire to redeem the whole outstanding amount of the Loan or any part of it not yet due for repayment in accordance with the Schedule of repayments hereto attached, it may do so up to the end of the seventeenth year by payment of a premium of Two and one-half per cent on the face value of the bonds, that is to say, by the payment of £102 10/—for each £100 bond, and after the lapse of seventeen years without premium: but in each and every case of such extra redemption the Imperial Chinese Government will give six months previous notice in writing to the Banks and such redemption shall be effected by additional drawings of bonds to take place on the date of an ordinary drawing as provided for in the Prospectus of the Loan.

When the Loan has been fully repaid this Agreement will immediately become null and boid. Bonds and interest coupons which have matured will be collected in due order and cancelled by the Banks as they are presented for payment and will be delivered by them to the Chinese Ministers in Great Britain, Germany, France and the United States of America. The Banks will refund in full to the Imperial Chinese Government the amounts of any drawn bonds and/ or interest coupons which have not been presented for payment within thirty years from the respective due dates for redemption or payment of interest.

ARTICLE VII.

The half-yearly payments due for amortization and interest referred to in Articles IV and V, shall be made in accordance with the amounts of the Schedule attached to this Agreement, and twelve days before their due dates as fixed by Articles IV and V, in equal shares to the Banks by the Ministry of Posts and Communications which shall hand to the Banks in Shanghai or in Hankow, twelve days before the said due dates, funds in Shanghai "Kuei-yuan" sycee or Hankow "Yang-li" sycee and/or coin of the National Currency (so soon as the said Currency shall have been effectively established) sufficient to meet such payments in Gold in Europe and the United States of America, exchange for which shall be settled with the Banks on the same day, the Ministry of Posts and Communications having, however, the option of settling exchange with the Banks simultaneously at any date or dates within six months previous to any due date for the payment of interest and/or principal. Those payments may, however, be made in gold in Europe and/or in the United States of America twelve days before their due dates if the Imperial Chinese Government should happen to have gold funds bona fide at their disposal in Europe and/or in the United States of America not remitted from China for the purpose, and desire so to use them.

In reimbursement of expenses connected with the payment of interest and repayment of principal of the Loan the Banks will receive from the Chinese Government a commission of one quarter per cent on the Annual Loan service.

ARTICLE VIII.

The Imperial Government of China hereby engages that the interest and principal of this Loan shall duly be paid in full and should the revenues of the railways and/or the proceeds of the Loan not be sufficient to provide for the due and full payment of interest and repayment of principal, the Ministry of Posts and Communications shall memorialize the Throne and the Imperial Government of China will thereupon make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the Banks on the date upon which funds are required to complete full payment of interest and repayment of principal.

ARTICLE IX.

The present Loan of Six Million Pounds (£6,000,000) Sterling together with the second series thereof, provision for the issue of which is made under the terms of Article XV hereinafter is hereby secured, in respect to both principal and interest, as a first charge upon:—

1. Hupei General Lekin amounting to Two million (2,000,000) Haikwan Taels a year.

2. Hupei Additional Salt Tax for River Defence amounting to Four Hundred Thousand (400,000) Haikwan Taels a year.

3. Hupei New Additional Two Cash Salt Tax of September, 1908, amounting to Three hundred thousand (300,000) Haikwan Taels a year.

4. Hupei collection of Hukuang inter-provincial Tax on imported Rice, to the amount of Two hundred and fifty thousand (250,000) Haikwan Taels a year.

5. Hunan General Lekin amounting to Two million (2,000,000) Haikwan Taels a year.

6. Hunan Salt Commissioner's Treasury Regular Salt Lekin to the amount of Two hundred and fifty thousand (250,000) Haikwan Taels a year.

The above P ovincial Revenues amounting to a total of Five Million two hundred thousand (5,200,000) Haikwan Taels a year, are hereby declared to be free from all other Loans, Charges or Mortgages.

So long as principal and interest of this Loan are regularly paid, there shall be no interference with these Provincial revenues; but if principal or interest of the Loan be in default at due date, then, after a reasonable period of grace, lekin and other suitable internal revenues of the Provinces of Hupei and Hunan sufficient to provide the amounts above stated shall forthwith be transferred to, and administered by the Imperial Maritime Customs in the interests of the bondholders. And so long as this Loan or any part thereof shall remain unredeemed, it shall have priority, both as regards principal and interest, over all future loans, charges and mortgages charged on the aforesaid Provincial Revenues. No loan, charge or mortgage shall be raised or created which shall take precedence of, or be on an equality with this Loan, or shall in any manner lessen or impair its security over the aforesaid Provincial Revenues, and any future loan, charge or mortgage charged on the said Provincial Revenues other than the second series of the present loan provided for in Article XV aforementioned shall be made subject to this Loan, and it shall be so expressed in every agreement for every such future loan, charge or mortgage.

After redemption of the existing gold bonds referred to in Article II of this Agreement it is understood and agreed that, so long as this Loan is unredeemed, the railways shall, under no circumstances, be mortgaged nor their receipts given as security to any other party.

In the event of the Chinese Government, during the currency of this Loan, entering upon definite arrangements for the revision of the Customs tariff, accompanied by stipulations for the decrease or abolition of lekin, it is hereby agreed on the one hand, that such revision shall not be barred by the fact that this Loan is secured by lekin and provincial revenues and, on the other hand, that whatever lekin is required to provide the security of this loan shall neither be decreased nor abolished except by previous arrangement with the Banks and then only in so far as an equivalent is substituted for it in the shape of a first charge upon the increase of Customs revenue consequent upon such revision.

ARTICLE X

The Banks are hereby authorized to issue to the subscribers to the Loan, bonds for the total amount of the Loan in Gold, for such amounts as may appear advisable to the Banks. The form and language of the bonds shall be settled by the Banks in consultation with the Ministry of Posts and Communications or the Chinese Minister in Berlin, London, Paris or Washington: they shall bear the facsimile of the signature of the Minister of Posts and Communications and of his seal of office, in order to dispense with the necessity of signing them all in person, and the Chinese Minister in Berlin and/or London and/or Paris and/or Washington at the option of the Banks shall, previous to the issue of the bonds, put his seal upon each bond, with a facsimile of his signature, as a proof that the issue and sale of the bonds are duly authorized by and binding upon the Imperial Chinese Government. The representatives of the Banks in Berlin, London, Paris or New York, as the case may be, shall countersign the bonds as Agents for the issue of the Loan.

In the event of any bond or bonds issued for this loan being lost, stolen or destroyed, the Group and/or Bank or Banks concerned shall immediately notify the Ministry of Posts and Communications and the Chinese Minister in Berlin, London, Paris or Washington, as the case may be, who shall authorize the Group and/or Bank or Banks concerned to insert an advertisement in the public newspapers notifying that payment of such bond or bonds has been stopped, and to take such other steps as may appear advisable or necessary according to the laws and customs of the country concerned, and should any bond or bonds be destroyed or should such lost or stolen bond or bonds not be recovered after a lapse of time to be fixed by the Group and/or Bank or Banks concerned, the Chinese Minister in Berlin, London, Paris or Washington, as the case may be, shall seal and execute a duplicate bond or duplicate bonds for a like amount and hand the same to the Group and/or Bank or Banks representing the owner or owners of such lost, stolen or destroyed bond or bonds, which Group and/or Bank or Banks shall pay all expenses in connection with such delivery and execution of such bond or bonds for the account of the owner or owners of such bo d or bonds.

ARTICLE XI

All bonds and coupons and payments made and received in connection with the service of this Loan shall be exempt from all Chinese taxes and imposts during the currency of this Loan.

ARTICLE XII

All details necessary for the Prospectus and connected with the payment of the interest and repayment of the principal of this Loan, not herein explicitly provided for, shall be left to the arrangement of the Banks in consultation with the Chinese Ministers in Berlin, London, Paris and Washington. The Banks are hereby authorized to issue the Prospectus of the Loan as soon as possible after the signing of this Agreement; and the Imperial Government will instruct the Chinese Ministers in Berlin, London, Paris and Washington to co-operate with the Banks in any matters requiring conjoint action, and to sign the Prospectus of the Loan.

ARTICLE XIII

This Loan of £6,000,000 Sterling shall be issued to the public in one amount as soon as possible after the signature of this Agreement, and not later than twelve months from the date thereof. The price of the bonds to the Imperial Chinese Government shall be Ninety five per cent of their nominal value. Subscriptions will be invited by the Banks in Europe, in the United States of America and in China from Chinese, Europeans and Americans on equal conditions, preference being given to the application of the Chinese Government provided such application be made not less than four days before the issue of the Prospectus to the public. Seven days' notice of the issue of the Prospectus will be given by the Banks to the Imperial Chinese Government.

ARTICLE XIV

The proceeds of the Loan shall be placed to the credit of a "Hukuang Government Railways Account" with the Deutsch-Asiatische Bank, the Hongkong & Shanghai Banking Corporation, and the Banque de l'Indo-Chine in China, Berlin, London or Paris as the case may be, and with the American Group, in New York or such Banks in China as from time to time shall be designated by the American Group, the International Banking Corporation being now so designated. Payments of the loan proceeds into the credit of this account shall be made in instalments and on dates conforming to the conditions allowed to the subscribers to the loan.

Interest at the rate of 3% per annum shall be granted on the credit balance of the portion of this account kept in Berlin, London, Paris or New York, and interest on the credit portion kept in China by the above Banks, will be allowed at the Banks' rate for current accounts to be arranged.

Subject to the payments and deductions to be made from the loan proceeds in terms of Articles II and III of this Agreement the Banks will hold the net balance with accrued interest to the order of the Ministry of Posts and Communications.

Transfers of the loan funds to China in amounts not exceeding Two hundred thousand Pounds Sterling (£200,000) transferred in any one week, will be made by the Ministry of Posts and Communications at its discretion, the transfers being effected through the Deutsch-Asiatische Bank, the Hongkong & Shanghai Banking Corporation, the Banque de l'Indo-Chine, and/or the Bank or Banks to be designated by the American Group, the International Banking Corporation being now so designated.

Transfers of the loan funds to China from the Banks in Europe and America, and transfers from the Banks in China to the Chinese Banks which are hereinafter designated shall be made as nearly as possible in equal amounts from each of the Banks, the rate of exchange for each transfer from Europe and America being settled simultaneously with the transferring Banks, either on the day on which such transfer is to be made, or at the option of the Ministry of Posts and Communications, on any date or dates within six months previous to the day on which the transfer is to be made. In the event of equal transfers being found to be impracticable a mutually satisfactory procedure for making the transfers above referred to shall be arranged between the Ministry of Posts and Communications and the Banks.

The transferred funds, to the extent of one half of the net balance of the Loan proceeds above referred to may, at the discretion of the Ministry of Posts and Communications, be deposited in a Hukuang Government Railways Account with the Bank of Communications (Chiao-Tung Bank) and/or with the Ta-Ching Government Bank, which Banks have been designated by the Ministry of Posts and Communications as its Agents for this purpose, and the Imperial Chinese Government hereby declares itself responsible for all the funds of this Loan deposited with the said Chinese Banks.

The Ministry of Posts and Communications shall from time to time make transfers from the loan funds held in China by the Banks and by the designated Chinese Banks to the credit of a construction account for the Hupei section of the Szechuan-Hankow Railway Line with the Deutsch-Asiatische Bank and of a construction account for the Hupei-Hunan section of the Canton-Hankow Railway Line with the Hongkong and Shanghai Banking Corporation, in amounts sufficient to cover one month's construction estimates in advance, so as to iusure the uninterrupted continuance of construction. The Ministry of Posts and Communications shall hand to the Banks, for the information of the Auditors (hereinafter referred to) quarterly statements of the loan funds held on deposit by the aforesaid designated Chinese Banks, and these funds shall not be withdrawn from the said Banks except for the purpose of transfer to the construction accounts above named. Funds shall be drawn from these construction accounts in sycee by the Managing Director as hereinafter provided, and it will rest with the Managing Director under the instructions of the Ministry of Posts and Communications to make all necessary arrangements for the distribution of such funds through Chinese Banks or otherwise to the points where they are required.

Requisitions upon these Construction Accounts will be drawn in amounts to suit the progress of construction of the railway lines by orders upon the Deutsch-Asiatische Bank or the Hongkong & Shanghai Banking Corporation signed by the Managing Director of the line concerned or, in his absence, by his duly authorized representative, who shall moreover, two days previous to the presentation of such order, issue in duplicate a certificate stating clearly the object for which the funds are to be drawn, handing one copy to the Auditor concerned (hereinafter referred to) and one copy to the Bank concerned. If the Auditor should find that there are irregularities in the payments to be made, he may in the first place ask the Managing Director for specific explanations, and if the Managing Director is unable to furnish definite explanations, the Auditor may refer the matter to the Ministry of Posts and Communications for its instructions.

The accounts of the Railways shall be kept in Chinese and English in accordance with accepted modern methods, and will be supported by all necessary vouchers. During the period of construction the said accounts and vouchers will be open at any time to the inspection of two Auditors for the Hupei-Hunan section of the Canton-Hankow Railway Line, and the Hupei section of the Szechuan-Hankow Railway Line respectively, appointed and paid by the Banks, whose dnty it will be to satisfy the Banks as to the due expenditnre of the loan funds in accordance with the provisions of Article III of this Agreement, and to certify to monthly statements of the foreign materials purchased by the Railway Administration under the provisions of Article XVIII hereinafter. The Railway Administration will publish annually upon the close of its financial year a Report in the Chinese and English languages, showing the working accounts and traffic receipts of the railways, which Reports shall be procurable by the public on application.

ARTICLE XV

If after the deduction of the amount required for the redemption of the Gold Bonds referred to in Article II of this Agreement, and of the sums necessary for the service of interest on the Loan during the time of construction, the balance of the Loan proceeds, with accrued interest, should not be sufficient to complete the construction and equipment of the railway lines named in Article II of this Agreement, the amount of deficiency shall be provided, in the first place, from such Chinese funds, as may be available so as to permit of the uninterrupted continuance of the work of construction, and any balance then uncovered shall be supplemented by the issue by the Banks, under the terms of the present Agreement, of a second series of the present Loan, for an amount not exceeding Four Million Pounds (£4,000,000) Sterling. This second series shall be secured pari passu as an equal charge in every respect on the internal revenues specified in Article IX of this Agreement, and the time of its issue shall be left to the discretion of the Banks. Should foreign capital still be required for the completion of the Railway Lines aforesaid it shall be provided by a further loan to be issued by the Banks on terms to be arranged. If after the completion of the lines there should be a balance at the credit of the Railways Account, such unused balance will be transferred to the credit of the Interest Reserve Fund, hereinafter mentioned in Article XX, as a provision for payments for which the Imperial Chinese Government is responsible under this Agreement, or will be devoted, if necessary, to the improvement of these railways or otherwise to their advantage.

ARTICLE XVI

If before the publication of the Prospectus for the issue of the Loan any political or financial crisis should take place by which the markets and the prices of existing Chinese Government Stocks are so affected as to render, in the opinion of the Banks, the successful issue of this Loan impossible on the terms herein named, the Banks shall be granted a reasonable extension of time for the performance of their contract. If within this time limit, to be arranged, the Loan shall not have been issued, then this contract shall become null and void, and any advances made by the Banks under the provisions of Article III of this Agreement, shall be repaid by the Chinese Government with accrued interest, but without any other compensation or remuneration whatsoever.

ARTICLE XVII

The construction and control of the railway lines shall be entirely and exclusively vested in the Imperial Chinese Government. For the work of construction the Imperial Chinese Government will select for appointment a fully qualified British Engineer-in-Chief for the Hupei-Hunan section of the Canton-Hankow railway line from Wuchang to Yichanghsien, and a fully qualified German Engineer-in-Chief for the Kuangshui-Ichang section of the Szechuan-Hankow railway line, with a fully qualified American Engineer-in-Chief for the section of that line from Ichang to Kueichoufu at the same time informing the Banks of the selection made. If the Banks have objections to offer against the Engineers-in-Chief thus selected for appointment, they shall, in stating their objections, give definite reasons therefor. The said Engineers-in-chief shall be under the orders of the Director General and the Managing Directors of the respective lines or, in their absence, of their duly authorized representatives, and will carry out all the wishes of the

Ministry of Posts and Communications with regard to the plan and construction of the lines. In their general conduct they shall pay all due respect to the Ministry of Posts and Communications, the Director General and the Managing Directors. The terms of their respective agreements will be arranged by the Ministry of Posts and Communications.

Whenever appointments are to be made or functions defined of the technical members of the railway staff, as well as in the case of their dismissal, the Director General, the Managing Director or, in his absence, his duly authorized representative, will act in consultation with the Engineer-in-Chief concerned, and in the case of disagreement the matter will be referred to the Ministry of Posts and Communications, whose decision shall be final.

After completion of construction, and during the currency of this Loan, the Imperial Chinese Government will continue to employ Europeans and/or Americans as Engineers-in-Chief of the said railway lines, these appointments being made without reference to the Banks.

ARTICLE XVIII

For the Hupei-Hunan section of the Canton-Hankow railway line, and the Hupei section of the Szechuan-Hankow railway line respectively (a) The British & Chinese Corporation, Limited, and (b) the Deutsch-Asiatische Bank will act as Agents of the Railway Administration during construction for the purchase of all materials, plant and goods required to be imported from abroad. From this category rails and their accessories are excepted; for the purchase of which the Ministry of Posts and Communications has memorialized the Throne recommending that they should be manufactured and supplied by the Hanyang Iron Works. Their price will be settled by the Ministry of Posts and Communications with the Hanyang Iron Works, after comparison with the current quotations for rails purchased by other lines from Europe or America. No delay will be allowed, and it is understood that if the Hanyang Iron Works are unable to supply the requirements of the lines in question in such manner as to insure uninterrupted construction, the Purchasing Agents will be instructed to procure from abroad the additional supplies required. For all important purchases of materials tenders shall be called for by the Director General or the Managing Director concerned: in the case of all tenders, indents and orders for the importation of goods and materials from abroad, the said Agents shall purchase the material required on the terms most advantageous to the railways, and shall charge the original net cost of the same, plus a commission of five per cent (5%). It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director concerned.

In return for payment of commission as above stated the British & Chinese Corporation, Limited, and the Deutsch-Asiatische Bank as Agents for the respective railway lines, shall be prepared to superintend the purchase of all foreign materials required for their construction and equipment, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality and that the aforesaid Agents will avail themselves of the services of engineering experts to be selected by the Ministry of Posts and Communications for the inspection of such materials. The fees of these Inspectors shall be borne in equal shares by the Ministry of Posts and Communications and the Purchasing agents. At equal rates and qualities goods of British, French, German and American manufacture shall be given impartial preference over other goods of foreign origin. The Railway Administration of the Ministry of Posts and Communications reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China, or abroad, should it see fit to do so.

The most favorable shipping and insurance rates are to be secured and statements thereof together with original invoices and Inspectors' certificates are to be submitted to the Director General and the Managing Director concerned: all return commissions and rebates of every description shall be credited to the railways, and all purchases made by the Agents on behalf of the railways shall be supported by manufacturers' original invoices and Inspectors' certificates. No commission shall be paid to the Agents except as above provided; but it is understood that the Railway Administration shall provide out of railway funds for the remuneration of Consulting Engineers whenever their services are engaged.

With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, French, German, American or other foreign goods to Chinese materials and goods manufactured in China, such cases being left to the decision, in consultation with the Engineers-in-Chief, of an Inspector appointed by the Ministry of Posts and Communications. No commission will be paid on purchases of such Chinese materials and goods.

It is understood and agreed that, after the construction of the lines is completed, the British & Chinese Corporation, Limited, and the Deutsch-Asiatische Bank will be given the preference for Agency business for the respective lines, during the currency of the Loan, for the supply of foreign materials which the Railway Administration may require, on terms to be hereafter mutually agreed upon.

ARTICLE XIX.

Should the Imperial Chinese Government itself hereafter consider it desirable to construct extensions in connection with the railway lines named in Article II of this Agreement in order that the interests of the country may be better served, such extensions shall be built by the Imperial Chinese Government with funds at its disposal from Chinese sources, but if foreign capital is required, and the terms offered by the Banks are as favorable as those offered by others preference will be given to the Banks.

ARTICLE XX.

After payment of interest and repayment of principal of this Loan for any current year, the Railway Administration will deposit with the Banks in Shanghai or Hankow any surplus of the net revenue of the railway lines for that year up to the amount required to pay the following year's instalments of interest on the Loan the rate of interest on the deposit being arranged with the Banks from time to time with due regard to the conditions of the market.

ARTICLE XXI

All expenses in connection with the flotation and issue of this Loan, such as underwriting, commission and brokerage, telegraph charges, advertising, postage, engraving and printing of Prospectus and bonds, stamp and legal fees, shall be borne by the Banks.

ARTICLE XXII

The Deutsch-Asiatische Bank, The Hongkong & Shanghai Banking Corporation, the Banque de l'Indo-Chine and the American Group shall take the Loan in equal shares and without responsibility for each other.

ARTICLE XXIII

The Deutsch-Asiatische Bank, the Hongkong & Shanghai Banking Corporation, the Banque de l'Indo-Chine and the American Group may, subject to all their obligations under this Agreement, transfer or delegate all or any of their rights, powers and discretions hereunder to any German, British, French or American Company, Directors or Agents, with power of further transfer and sub-delegation; such transfer, subtransfer, delegation or sub-delegation to be subject to the approval of the Ministry of Posts and Communications.

ARTICLE XXIV

This Agreement is signed under the authority of an Imperial Edict dated the twenty-second day of the fourth month of the third year of the Emperor Hsuan T'ung corresponding to the twentieth day of May, 1911, Western Calendar, which will be officially communicated to the Ministers of Great Britain, France, Germany and the United States of America in Peking by the Wai Wu Pu.

ARTICLE XXV

Eight sets of this Agreement are executed in English and Chinese, four sets to be retained by the Imperial Chinese Government and four sets by the Banks. In the event of any doubt arising regarding the interpretation of the contract the English text shall rule.

Signed at Peking by the Contracting Parties this twenty second day of the fourth month of the third year of the Emperor Hsu n T'ung, corresponding to the tw ntieth day of May, One thousand nine hundred and eleven, Western Calendar.

Seal of
Ministry
of
Posts and
Communications.

The Minister of Posts and Communications,
SHENG HSUAN-HUAI

For the Deutsch-Asiatische Bank,
H. CORDES.

For the Hongkong & Shanghai Banking Corporation,
E. G. HILLIER,
Agent.

Banque de l'Indo Chine
R. SAINT PIERRE CASENAVE.

For J. P. Morgan & Company,
Kuhn, Loeb & Company,
The First National Bank,
The National City Bank, of New York
constituting
"The American Group"
WILLARD STRAIGHT,
Representative.

THE FAR EASTERN REVIEW

VOL. VIII.—No. 8. MANILA AND SHANGHAI, JANUARY, 1912. 25 cents, U. S. Cy.

The Royal State Railways of Siam

Forbes

Philippine Public Works

ROYAL PAVILION AT THE BANGKOK TERMINUS OF THE SIAM ROYAL STATER AILWAY
AT THE OPENING OF LINE TO PETRIEU IN 1908

The Philippine Railways

General News and Comment

THE FAR EASTERN REVIEW

VOL. VIII.—No. 10. MANILA AND SHANGHAI, MARCH, 1912. 25 cents, U. S. Cy.

Japan's Mining Industry

The World's Tea Trade

America's Export Trade

Sir FREDERICK JOHN DEALTRY LUGARD,
G. C. M. G., C. B., D. S. D., Governor of Hongkong, Recently Appointed Joint Commissioner of the United Territories of Nigeria.

Far Eastern Engineering and Industrial News

PHILIPPINE MINING NEWS

AMEARI RIVER PLACERS.—During the month a new and promising placer gold district has attracted attention in mining circles as the result of a favorable report made by H. Park, a prominent Australian mining engineer of Sydney who represents the Ameari Option Co. Ltd. of that city. The group of claims are owned by a group of businessmen of Manila represented by Messrs. Squires, Bingham & Co., and the negotiations were carried on through Messrs. Johnson & Hartmen, two Australians who have been looking over the Philippine field.

The tests upon which Engineer Park made his report averaged 32 cents gold per cubic yard and cover a sufficient area for one dredge of 100,000 yards capacity a month. There is additional ground for three more dredges which will be taken up by the Sydney company as the final tests proceed.

The result of Mr. Park's report is a contract for the first dredge which will be constructed and installed as soon as possible.

The Ameari district is situated on the Ameari River which flows into Dingalong Bay. During the six months of April to September, conditions are very favorable. Transportation by water during those months is easily effected and it is very probable that the plant will be then shipped direct to Dingalong Bay from Australia during these months. The balance of the year is marked by heavy rains and storms on the east coast.

The district is accessible from Cabanatuan, Nueva Ecija, by trails over the Eastern range, the journey covering about two days from the line. There is little doubt that roads will be built into the district once its value as a gold producer warrants the outlay.

The claims are directly across the eastern watershed in Tayabas from the placer fields of Nueva Ecija, and points to a heavy mineralization of the eastern range.

West of the Ameari Option Co.'s property on the upper reaches of the river claims have been located and the owners have organized the Luzon Gold Company to engage in sluicing. Operations will commence in March.

THE HEADWATERS MINING CO.—This company's plant has been shut down for some time, due, according to reports given out, to shortage of funds to carry on development and operation. No definite explanation has been made by the company's officials for suspending operations, but there is reason to believe that the finances would not be difficult of adjustment. The property is reported to be a valuable one and the plant fairly adapted to saving the values. The operations appear to have been in the preliminary stage when suspended so that no definite estimate is available of probable returns working under favorable conditions and at full capacity.

The suspension of operations at this stage is regrettable in view of its effect upon development in Benguet where very satisfactory results have been secured from the operations of small plants on other properties. Had the district escaped the severe storms of the last two years, there is little doubt but that there would have been a splendid showing from the district. This is especially true of the Benguet Consolidated that had arrived at the dividend paying point when the typhoon of 1909 destroyed the greater part of the plant. We understand that by the end of the present year arrangements will be concluded to install a new plant on a suitable and well protected point.

THE MAJOR MINES.—A report from Baguio is to the effect that the plant of this company turned out a 65½ oz. bar as the result of a nine day run, off the plates alone.

THE EXPLORATION COMPANY'S DREDGE.—Mr. J. Peterson representing the New York Engineering Company arrived in Manila early this month for the purpose of superintending the construction of a dredge on the Gumaus property in Paracale. The steamer Harlesden has discharged a cargo of Oregon pine and 40 tons of hull fittings which will be used in constructing the pontoons. Works will begin at once.

Mr. Peterson has just completed the installation of a large dredging plant for his company in the Orsk district, Siberia. A tramway one mile long has been built on the property to facilitate transportation of materials and supplies.

The Gumaus property was secured under option two years ago by the Philippine Exploration Company. The price paid for the option was $50,000 which gave the latter the right to purchase the control at a price representing the necessary cost and expense of installing the dredging machinery and equipment.

The plans prepared for the Gumaus dredge call for 5½ foot close connected buckets, steam drive, with wood hull and framing. Features of the design provide ample deck room and large gold saving surface.

The New York Engineering Co. make a specialty of gold dredge building and has made most successful installations in almost every part of the globe.

THE COLORADO MINING CO.—This company has been operating a 100-ton plant on its properties in Aroroy, Masbate, continuously since December 1. The operations previous to that date were for the purpose of preliminary tests of the plant. For the first 24 days in December, 2300 tons were treated and it is expected in a few months when stoping is undertaken to operate to its full capacity or from 100 to 120 tons daily. Definite information on results in values is not available beyond the fact that ₱33,000 was realized from the clean-up December 23. The process is cyanide all-sliming by which the largest possible percentage of values is realized. The Colorado Mining Company's property and plant represent an investment of ₱600,000. The development of this property has been in progress for over six years and is probably in the most advanced stage of any property in the islands. By careful investigation of the proper treatment to apply to the character of ore, a plant was evolved that has been most satisfactory in its operation.

MASBATE ACTIVITY.—The Eastern Mining Company continues active in development work and we understand that negotiations are under way for the purpose of installing a plant. A mining engineer is now engaged in investigating the property with a view to making recommendations as to method of treatment, etc.

The Cogon Company is making headway on development work and almost every prospect is passing to the stage of more or less development. This activity is largely due to the success of the Colorado Company.

THE CAMOTE MINE.—This company has not added any equipment to its plant which comprises a three stamp mill. The report from there for December gives the output at 72 ounces.

THE PHILIPPINE DREDGE.—The returns from the Malaguit maintains the monthly record of 200 ounces. According to reports testing shows increased values as the work proceeds.

THE FAR EASTERN RAILWAY NEWS

SINGAPORE RAILWAY—The Federated Malay States Railways authorities took over the lease of the Singapore Railway on January 1. A reduction in passenger rates is proposed, but no change is contemplated in freight rates. Among the improvements proposed is the construction of a large and commodious railway depot in Singapore. This section of line is the connecting link between Singapore and the F. M. S. system.

MANILA RAILROAD CONSTRUCTION—The construction program of this company on the southern lines includes work on the line from Lucena to Legaspi, to be carried on in three sections simultaneously.

SOUTH MANCHURIA RAILWAY COMPANY—The tenth semi-annual meeting of this company was held last month and the following accounts were adopted and distribution of profits made:

	Yen.
Profit for the term	251,888
Balance brought over from last accounts	2,465,413
Total	2,721,301
To legal reserve	12,794
Dividend on the Government shares.	12,794
Dividend to shareholders (6 per cent. per annum)	60,000
Special reserve	500,000
Bonus to officials	18,000
Balance carried forward to next accounts	1,830,507

President Nakamura stated that the important undertakings accomplished by the company during the last term were the reconstruction of the Antung-Mukden line and the arrangement for the working of the Fushun collieries. The reconstruction of the railway line was achieved with steady progress and the through train service between Seoul and Mukden has been maintained since the first of November. Necessary arrangements for the working of the Fushun coal mine had also been perfected, and the working of Togo and Oyama collieries commenced. the daily output of the two mines being about 540 tons, which makes a total output of 3,500 tons a day of all collieries and not difficult to obtain a total production of 5,000 tons a day. The construction of factories on the Shaho is progressing.

During the term the company netted a profit of 255,000 yen out of the gross receipts amounting to 11,450,000 yen against 11,190,000 yen of disbursements. Compared with the previous term the figures presented a decrease of about 380,000 yen in the net profit. The decline in the receipts was on account of the storm damage, the outlay involved in the pest prevention fund, and the advance of the interest on company debentures, which showed an increase of over 1,300,000 yen. On the revenue side, the receipts from the railway and collieries business showed an increase of over 400,000 and 300,000 yen respectively. There was an increase also in the electric, gas, harbor, and other incidental business, though some deficit was experienced in hotels and some other lines. Out of the total receipts of 2,721,301 yen, including 2,465,413 yen balance brought over from the previous term, the directors recommended that 60 000 yen be distributed among the shareholders as a dividend at the rate of 6 per cent. The remainder has been distributed as follows:—12,794 yen to legal reserve; 300,000 yen to dividend to the shares held by the Government; 500,000 yen as special reserve and 18,000 yen as bonus to officials, the balance of 1,830,507 yen being carried forward to next term.

The following comparative tables will be of interest:

	Revenue for first six months in 1911. Yen.	Revenue in corresponding period in 1910. Yen.
Railway	6,324,123	5,594,769
Shipping	144,632	117,377
Mining	2,970,892	2,217,806
Harbour	540,162	474,080
Local	237,852	220,124
Hotel	139,317	113,327
Electricity	393,815	270,161
Gas	48,677	20,803
Miscellaneous	44,727	64,656
Interest	608,923	318,137
Total	11,453,160	9,411,240

The working expenses show a corresponding increase as indicated below:—

	Jan.-June, 1911. Yen.	Jan.-June, 1910. Yen.
Railway	3,323,302	3,015,331
Shipping	247,820	225,417
Mining	2,020,181	1,593 570
Harbour	540,814	417,795
Local	518,747	462,185
Pest prevention	142,329	—
Hotel	157,972	242,252
Electricity	297,203	242,252
Gas	30,505	17,053
Miscellaneous	86,451	39,099
General expenses	717,109	588,727
Interest on debentures	2,945,171	1,952,600
Margin of debentures issued	169,659	87,659
Total	11,197,272	8,883,940

THE AMUR RAILWAY.—A British Consular report from Vladivostock gives the following review of this railway from the pen of H. M. Consul, Mr. R. M. Hodgson:

The Amur Railway, as it is now being built, follows a somewhat different route from the one originally intended *via* Sretensk and the Shilka. It now leaves the Karimskaya-Sretensk branch—which was constructed before the Russo-Japanese war—where this crosses the Kwenga River, and bears inland, following the valleys of the Aleyur and Urium and the northern slopes of the Ksenyevsky Mountains. The line consists of four sections, nsmely:—Head section, 120 miles; western section, 395 miles; middle section, 423 miles; and eastern section, 318 miles—a total of 1,256 miles. It will, when completed, have five or perhaps six branch lines, counting as one of them the short piece of track between Kwenga and Sretensk. Work was begun on the head section in 1907, and towards the end of 1910 this section was opened for traffic, though the permanent way was in an unfinished and unsatisfactory condition; much more remains to be done before the line can be regarded as in proper order. Preparatory work was started on the western section—from Urium to Kerak—in the autumn of 1908 and was continued through 1909. It was anticipated that this section would be completed in the autumn of 1913. The middle section extends from Kerat to a point some 20 miles to the west of the Bureya. Preparatory work was commenced upon it in 1910 and is being continued throughout the present year. The route for the eastern section—terminating at Khabarovsk—was only definitely fixed towards the end of 1910 after prolonged surveying (see *Board of Trade Journal* of May 25 last, p. 421). What is known as the southern variant, which crosses the Bureya at the village of Kamenka, was finally adopted. Preparatory work was started upon it at the beginning of 1911, and it is calculated that it should be completed by 1915. Work is thus being carried on during the present year over the whole length of the line, and some 70,000 men are employed upon it. Of the branch lines, the eastern one to Tchasovinskaya was completed before the end of 1910, and the one to Reynova should be finished in 1911. The longest of the branch lines, which runs from Botchkoryova on the main line to Blagovestchensk, is also in progress, but is reported to be very backward, and it is unlikely that it will be in working order before the beginning of 1913. Commercially, the railway has no chance of paying its way, at all events for many years to come. It will be, however, a valuable economic asset, inasmuch as it will hasten the opening up of very large areas which to all intents and purposes have remained till now unknown. The western section and nearly all the eastern section are most unpromising; the country is wild and rough, and the climatic conditions are extremely severe. It is believed, however, that there exist very rich mineral deposits, which the construction of the railway will render accessible. The prospects on the middle section are much brighter, for it will improve communications with important goldfields in the Zeya and Bureya river systems, will traverse the very fertile region watered by these rivers, and already largely settled with peasant and Cossack communities, and by means of the branch line running to Blagovestchensk will develop relations with North Manchuria.

The line will ultimately be carried on along the north bank of the Amur to Nikolaievsk, while the navigation of the Lower Amur and the Amur estuary are to be improved. A complete system of communications by water and by rail will thus be established, uniting the centre of Siberia with the Pacific.

AUSTRALIAN RAILWAYS.—At the end of 1910 there were in New South Wales 3,754 miles of State-owned lines open for traffic, against 3,623 miles at the close of 1909. Private lines show little increase over the 141 miles for general and 124 miles for special service available in December, 1909. The revenue from the Government railroads in 1910 was $28,544,622, made up of passenger receipts $11,282,432 and freight receipts $17,262,190. The expenditure was $17,186,146, showing a profit of $11,358,476. The number of passengers carried was 56,168,040 and the freight and live stock 9,808,233 tons.

In the State of Victoria the new mileage opened for traffic during 1910 was 75, bringing the total at the end of the year up to 3,514 miles, at which time there were also approximately 196 miles under construction. The gross revenue for the year was $22,711,101, the expenditure $13,694,873. Of the total revenue $9,145,103 represented passenger earnings, the balance, $13,566,098, being the return from the freight, live stock, and parcels traffic.

Queensland shows railroad mileage increases during 1910 of 264, bringing that State's total up to 3,806 miles, 431 miles under construction at the end of the year and a further 2,009 miles authorized by Parliament but not yet begun. The gross revenue for the year was $12,456,705, and the expenditure $6,883,296, leaving a net profit of $5,573,409.

Western Australia reports 2,400 miles of railroad open for traffic at the close of the year ended June, 1910, a gain of 258 miles compared with the previous year, with approximately 475 miles authorized and under construction. The gross earnings were $7,957,443 and the expenditure $5,330,973, leaving a profit of $2,626,470.

Tasmania made only small additions to its railroad mileage during 1910. The lines open for traffic now show 470 miles. From this system the revenue last year was $1,380,546 and the expenditure $1,028,750, a balance to credit of $351,796.

In South Australia the total mileage open for traffic was 2,058, with 303 miles authorized and in course of construction. The earnings were $3,944,339 and the expenditure $5,196,020, showing a profit of $3,748, 319.

The revenue from the railroads of the Commonwealth is thus shown to have been $81,994,756, and the expenditure $49,320,058. From the railroads therefore the States of Australia benefited in 1910 by an amount approximating $32,674,698.

There is also 1,000 miles of private railways with a capitalization of approximately £4,000,000.

P. M. S. CARS DE LUXE.—Vice-Consul General D. Milton Figart of Singapore gives the following description of the new sleeping cars recently secured for this system.

One of the new sleeping cars brought out from England in sections and put together at the Central Workshops, has now been placed in service on the Singapore Mail from Kuala Lumpur.

The car contains eight separate sleeping rooms on either side of a central passage. The rooms are shut off from the passage by doors, thus insuring privacy, and are very comfortably fitted up. Each contains two berths, with spring mattresses, one above the other, a large half-length looking-glass, a shut-up washstand which by an ingenious contrivance can be converted into a writing table, a folding stool, and step ladder for the upper berth. The rooms are brilliantly lighted by three small electric lamps and one big one and well ventilated by two windows with wire-gauze screens and blinds, as well as by a ventilator over the large electric lamp in the roof. By each bed are switches for the lights and electric bell pushes which communicate with a number board in the corridor. The sides of the rooms and corridor are paneled with English oak, while the bed rails are polished brass. In addition to the bedrooms, each car contains lavatories and a bathroom, with shower bath and cupboard with waterproof curtain for bathers' clothes.

THE TRANS-AUSTRALIAN RAILWAYS.—The line is to run from west to east, and to connect West Australia with the four States of the east. When the line is completed, there will be a through service between Perth and Adelaide; but for several hundreds of miles along the track there will be practically no byway traffic. The southern shores of West Australia are practically uninhabited, and for all the passengers there will be on the greater part of the line, the trains might as well make a non-stop run. For some time, of course, the line cannot possibly pay expenses, but that is not a conclusive argument against it. The reason for its existence is largely political, and it will certainly be of more effect in unifying Australia than any other item in the Government's political programme. From the commercial point of view, it remains to be seen whether the line will be able to compete at ordinary rates, in the carriage of passengers and freight with the great steamship companies. Another trans-continental line is under consideration, of very much the same character, from the south to Port Darwin in the Northern Territory. That project for results in the development of the neglected north of the continent will be more important than the East-and-West line.

SUPPLY OF RAILWAY MATERIALS.—The East Indian Railway Company have placed an order with Messrs. J. Butler and Co., Ld., England, for the supply of the steel work and materials required for the strengthening of the Sone Bridge. Messrs. Stableford and Company, Limited, Coalville are supplying the Eastern Bengal State Railway with the underframe and iron work, bogie trucks, etc., required for the construction of a special vehicle for the conveyance of boilers and heavy machinery over this line. Messrs. Horsehay Co., Ld., England, are manufacturing a sixty feet broad gauge through skew bridge girder span for the North-Western State Railway, which will weigh 55 tons, or nearly a ton per lineal foot. Messrs. Kendall and Gent, Limited, Victoria Works, Belle Vue, Manchester, have an order from the Bengal-Nagpur Railway Company for the supply of radial drilling machine; Messrs. John Spencer, Limited, Wednesbury, have a contract for the supply of tubular poles, insulators and brackets to this line; and The Union Electric Co., Ld., for the supply of open arc lamps and lattice masts; while Messrs. Bertram Thomas, Limited, are supplying a switchboard feeder panel. The Yorkshire Copper Works, Limited, have a large order for the supply of brass and copper tubes to the East Indian Railway; and Messrs. P. and W. MacLellan, Limited, Glasgow, Clutha Works, for bolts, nuts, and rivets etc. Messrs. A. Everitt and Sons, Limited, had a contract for the supply of 150 cwts. of copper

HENSCHEL & SOHN,

CASSELL, GERMANY

ESTABLISHED 1817

Locomotive Builders & Steel Works Proprietors.

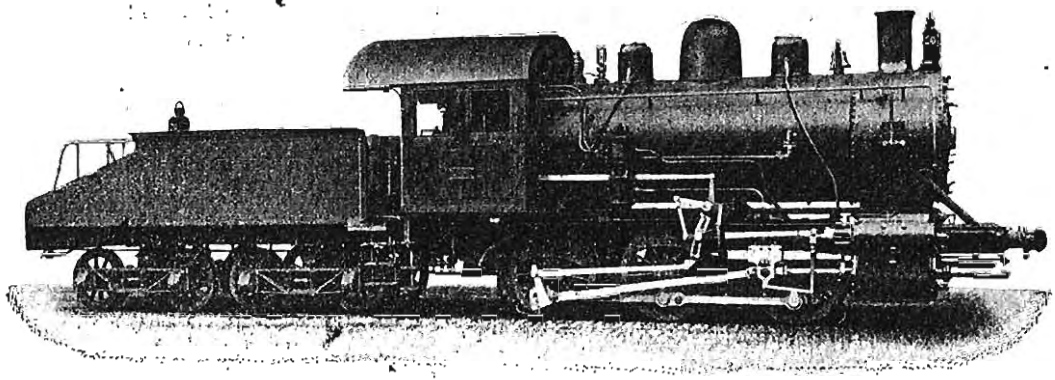
STEEL WORKS:
HENRICHSHÜTTE, HATTINGEN.

Boiler Plates, Boiler Ends, Tubes, Dished and Flanged Plates, Domes, etc. Black and Galvanised Sheets, Buckle Plates, Gas and Steam Pipes, Electric Welded and Riveted Drums, Steel Casks, Trucks for Collieries, etc., etc.

Locomotive Works; CASSEL.

Annual Capacity, 800 Locomotives. Total Output exceeds 10,300.

Milan Exhibition, 1906: GRAND PRIX.



Type of Locomotives for The Kiangsu Railway, China.

LOCOMOTIVES OF EVERY DESCRIPTION.

From lightest to heaviest types, to suit any gauge. Special designs made for Contractors, Mines, Street Railways, etc.

STEAM MOTOR CARS.

NUT PRESSES, "KETTLER SYSTEM" (Working without any Waste of Material.)

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Steel Castings and Forgings. Straight and Cranked Propeller Shafts, Stern Posts, Rudder Frames, Mill Housings, Cast Steel Rolls, Wheels and Axles, Crank Axles, Tyres, All Parts for the Construction of Locomotives and Machinery.

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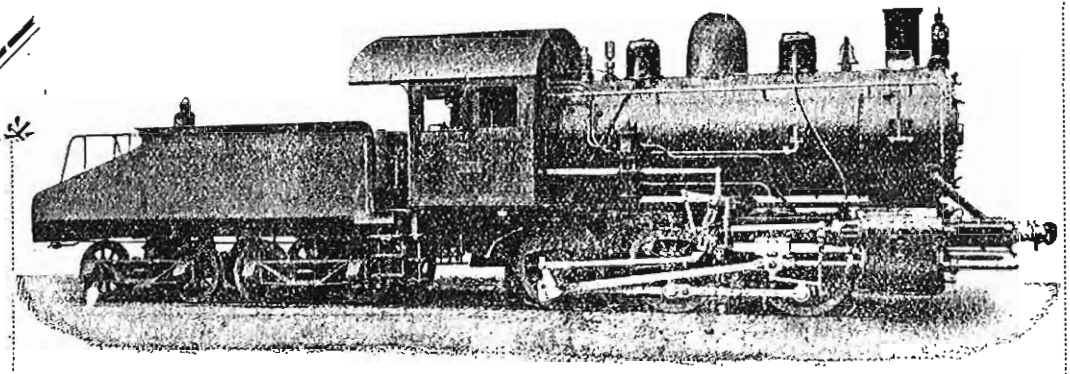
德國亨舍而森廠

於一八一七年設在卡色而埠

專造火車頭兼鍊鋼料

迄今造車已逾一萬二千座每年造車頭一千座

於一九〇六年在密蘭賽會得頭等獎牌



蘇路火車頭式兼各式火車頭

由輕至重各配軌道之用

如欲定造礦用街用各車亦皆承造

汽動自行車

日造壓帽釘機不使廢料

中國總經理人上海

禮和洋行

Henschel & Sohn

廠鋼

亨利許試埠

哈汀根埠

製

爐板

爐端板

凹形並摺邊管

圓頂板等

鍍黑白鉛鋼片

水汽管

電合釘成桶

鋼桶

運煤車等物

等等

廠鋼

亨利許試埠

哈汀根埠

專製

鑄鋼成品

鍛鋼成件

曲直輪軸

柁柱

柁架

屋蓋

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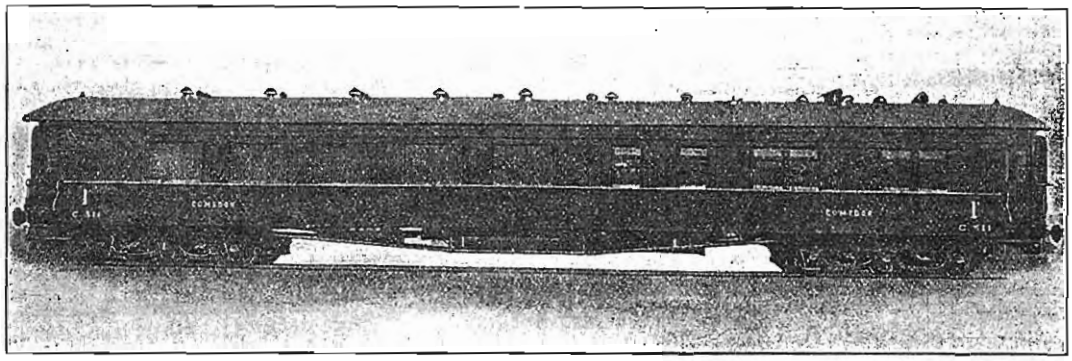
輪軸

曲拐

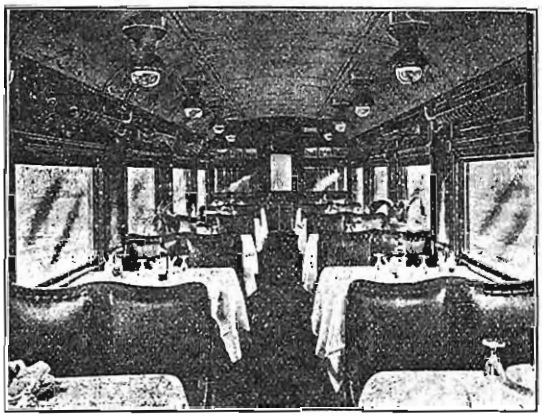
輪箍

火車機器各件

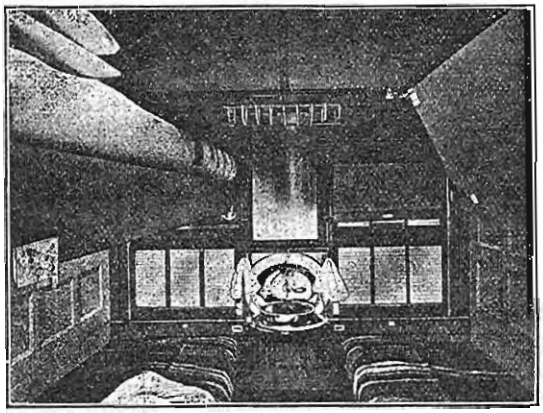
美國火車公司



上圖爲本公司代亞根底那政府所造之客車計身長七十尺底閣五尺六寸重量約九萬八千磅車內寢室及大餐間一應俱全



大餐間之內容



寢室之內容

本公司每年之出品數計

貨車	十五萬輛
客車	一千五百輛
車輪	二百萬輛

總發行所　芝卡哥　紐約　森羅伊

出口經理處　紐約百老匯路百六十五號　屠的斯密蘭公司

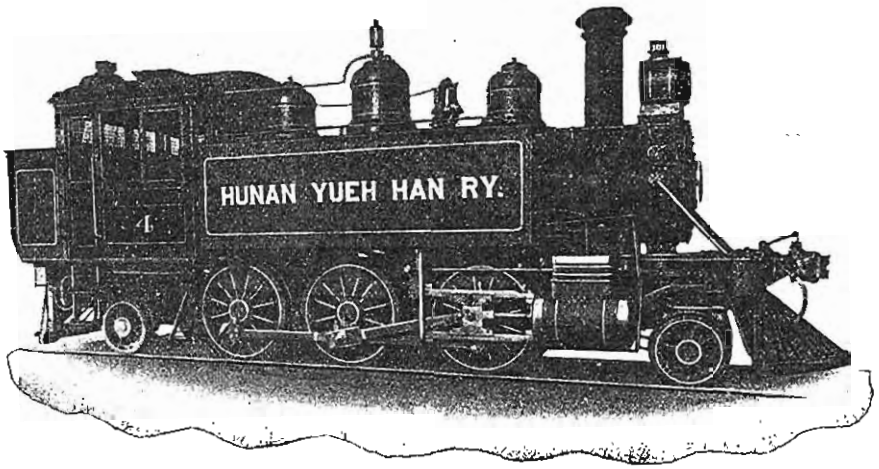
世界交通輪軌接錯商埠要道無不賴火車以利轉輸本公司所造各種車輛久蒙各界歡迎無煩贅述幸賜顧者垂鑒焉此佈

American Car & Foundry Company

巴爾威機器車頭廠

中國總經理 香港上海天津漢口 德商瑞記洋行

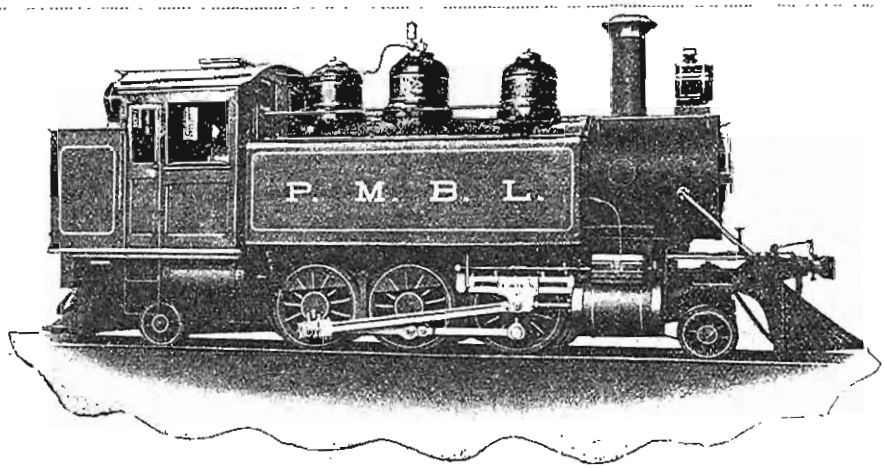
日本總經理東京舍爾並法辣薩有限公司



總公司開設在美國非拉地爾佛巴爾威五百號專製各種鐵路車頭其發動機器或用水汽或用電汽或用冷水汽壓力或用電汽摩圖各式俱備並皆佳妙兼製靈捷手車工料堅實製造精細早爲全球所公認茲將各路局購用本廠車頭手車之主顧詳細開列於下

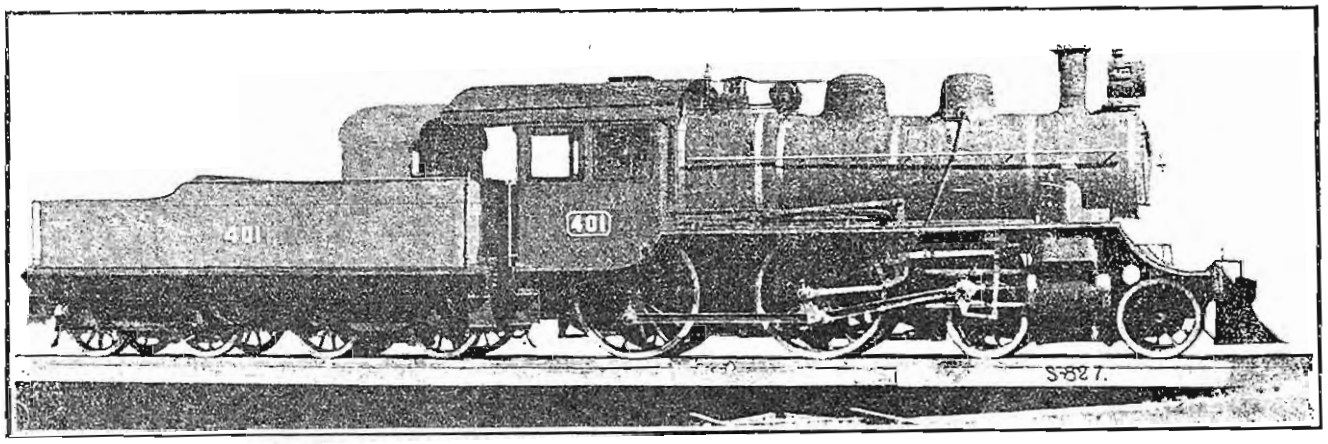
中國北方鐵路　南滿洲鐵路　安東盛京鐵路　高麗鐵路　中國東方鐵路　京張鐵路　津浦鐵路　四川川漢鐵路　湖南粵漢鐵路　粵漢鐵路　新寧鐵路　菲律濱鐵路　日本全國鐵路

The Baldwin Locomotive Works



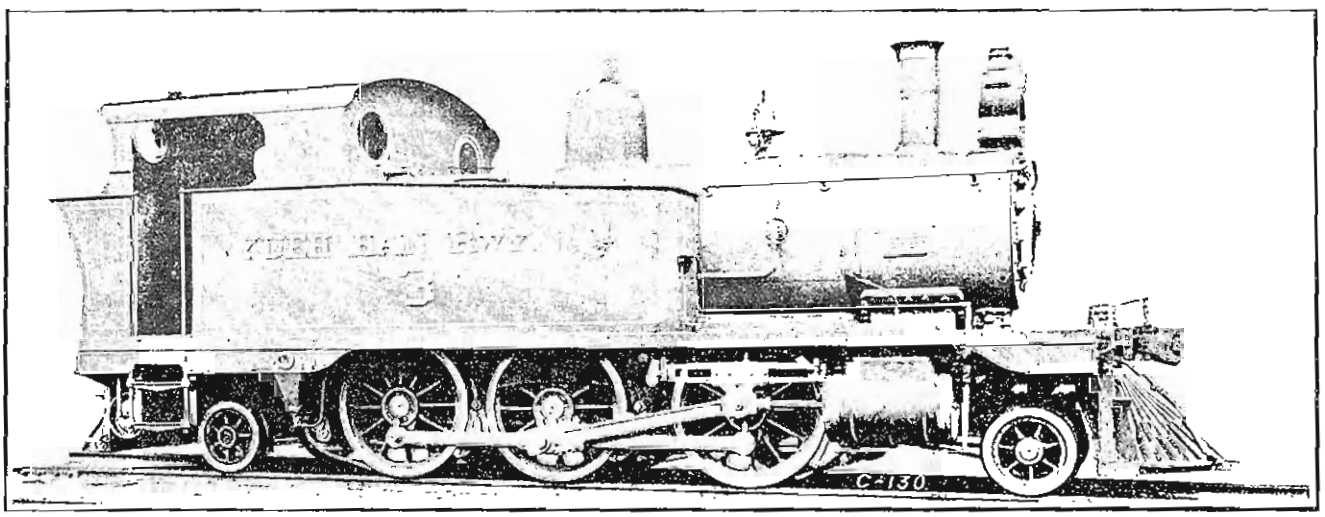
美國製造火車公司之火車極合用於中國鐵道

美國所製造之八輪火車頭卽近時朝鮮鐵道所用之八輪火車頭甚爲合用已著明效拖客車至六輛或八輛其速力計一點鐘可駛二十至四十五英哩之遙按此種機車式關係用於中國鐵道尤爲適宜



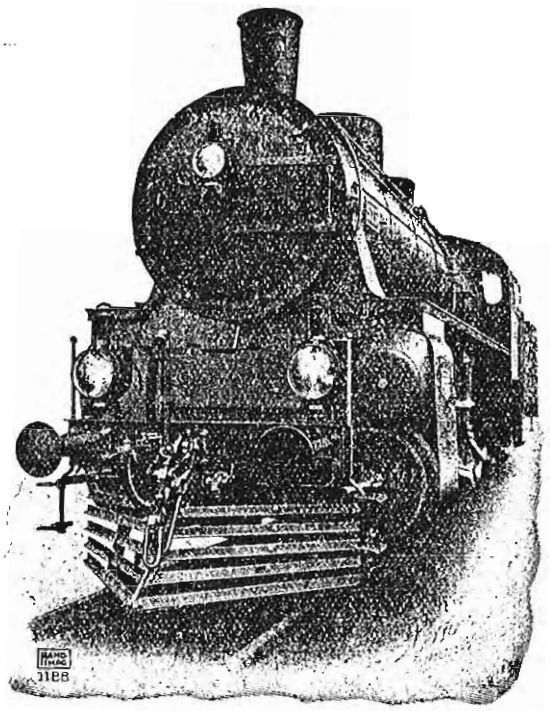
圖……汽筒口徑十八寸長廿六寸　推挽輪長七十二寸　拖力一萬七千九百磅

火車頭之製造也在購辦者無不以最新式最適用爲貴而製造家亦必以最新式最適用者求合於購辦者之心爲能達其目的夫果欲合購辦者之心則必須經機關師之幾番商榷始可辦理如　貴客欲與本公司在中國之經理處三井洋行面商則本公司當派機關師就商一切概不需費



中國粵漢鐵路之六輪雙水櫃車拖帶貨車或客車或貨車客車連帶之列車其速力與上圖記八輪車頭快慢有異者因此車速力較小拖帶列車之數遂少但前後有兩小輪可無旋轉機而能進退自如故駛行之時便捷多矣其特別出色之處卽在此兩小輪也

在中國經理處三井洋行上海天津廣東漢口香港廈門盛京
本公司在美京紐約禮拜堂街三十號　電碼
Locomotive New York
Annual Eapacity; 3500 Locomotive.
American Locomotive Company



本廠前名喬治依克司託夫於一千八百三十五年開創在德國海拿浮林騰地方專造各種火車車頭已有六千九百餘部之多中外歡迎成效昭著中國之津浦鐵路及滬杭甬鐵路等車頭亦曾向本廠訂購如蒙賜顧請逕向本廠駐華經理

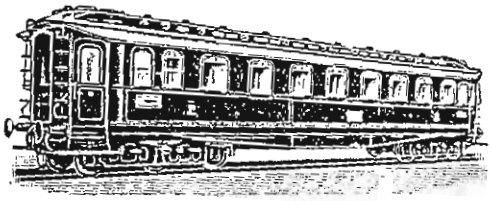
青天上
島津海

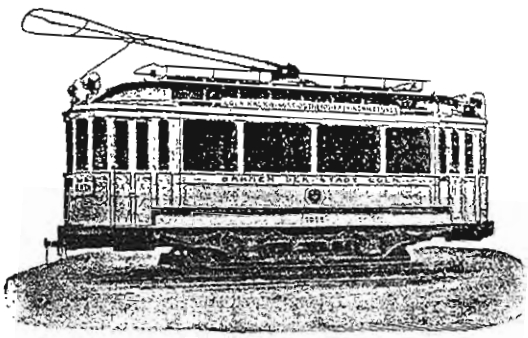
捷成洋行接洽可也

德國海拿浮區機器廠謹白

H. Diederichsen & Co.

歐倫反考羅男爵不來老廠創於一千八百年種道軌車車迴車貨及退熱要件俱全如蒙詢問詳細情形祈惠顧面洽是荷

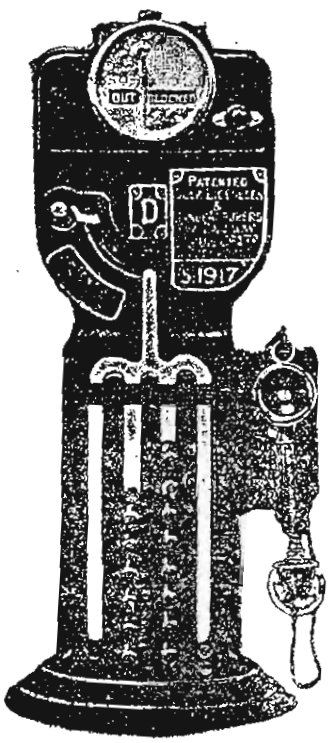




上海美最時洋行謹啓

P. Herbrand & Co.

倫敦鐵路報信機器公司



本公司專造各種報信機器凡來往火車或有損失及各不測之事但看此機即可明瞭其用法或電氣或機器均無不可并專售單軌鐵道所用各種機器如蒙　賜顧無不格外歡迎

發售處英京倫敦衙司敏司德

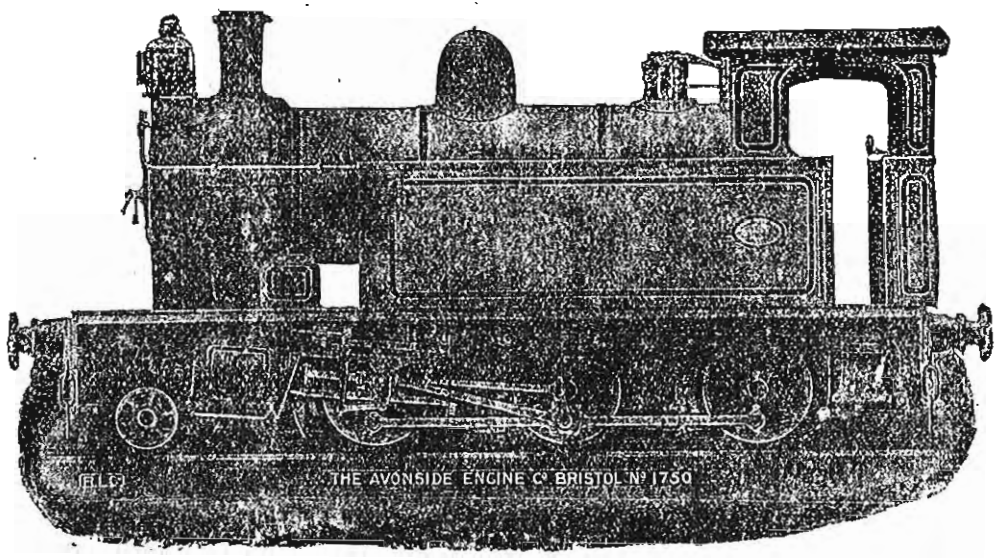
電碼 Snalig London

The Railway Signal Co., Ltd.

亞文帥機關車公司

The Avonside Engine Co , Ltd.

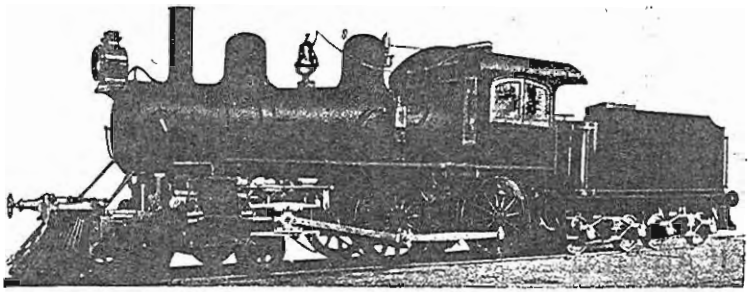
水汽機關車(即車頭)



或汽油機車各式皆備

英國孛力斯多亞文帥公司

LIMA LOCOMOTIVE



EIGHT WHEEL LOCOMOTIVE
4-4-0-8

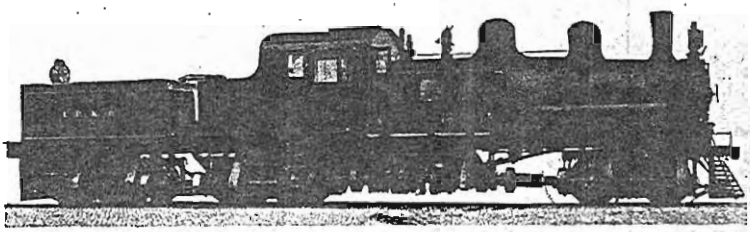
Cylinders 15″×24″, weight on drivers 58000 pounds, 49½″ Extended Wagon Top Boiler, 180 pounds working pressure.
Tractive power 13770 lbs.

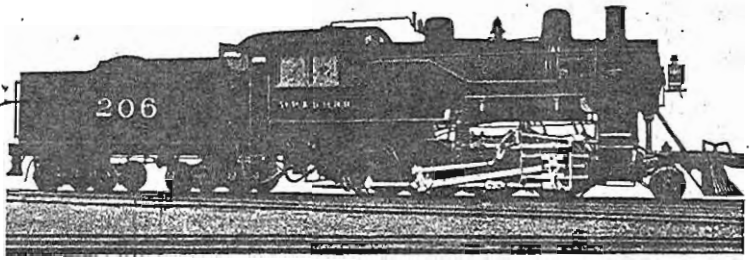
Built for
SENOR PEDRO ROSSELOT,
CORRAL, CHILI

SHAY GEARED LOCOMOTIVE
100 Ton.

Cylinders 3-15″×17″, 60½″ Extended Wagon Top Boiler, 200 pounds working pressure.
Tractive power 44100 lbs.

Built for
IMPERIAL PEKING KALGAN RAILWAY,
PEKING, CHINA





CONSOLIDATION LOCOMOTIVE
2-8-0-8

Cylinders, 20″×28″, weight on drivers 155000 pounds, 68″ Extended Wagon Top Boiler, 200 pounds working pressure.
Tractive Power 34000 lbs.

Built for
ST. PAUL and DES MOINES RAILWAY,
DES MOINES, IOWA, U. S. A.

We Manufacture all Types and Sizes of Direct Connected Locomotives, as well as the Shay Geared Locomotives for any Gauge practical.
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Agent:
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Hongkong, Canton, Shanghai, Tientsin, China

The Lima Locomotive & Machine Co.

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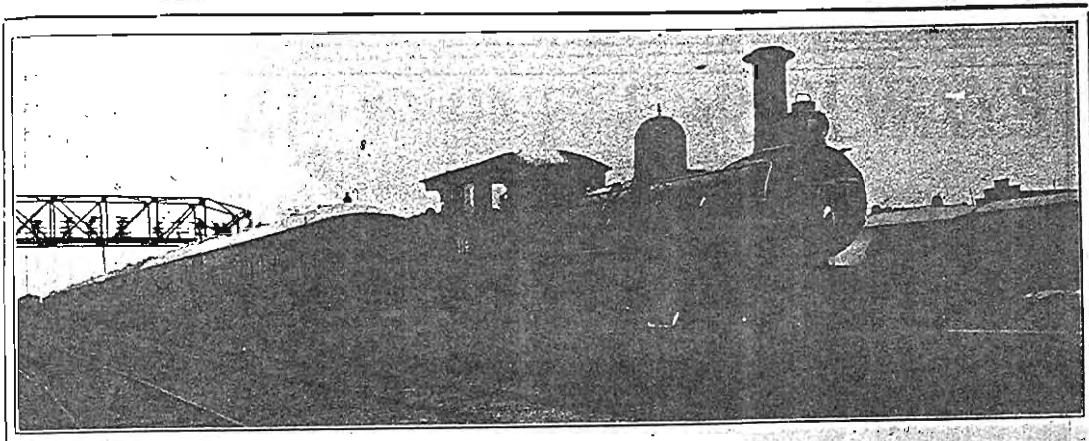


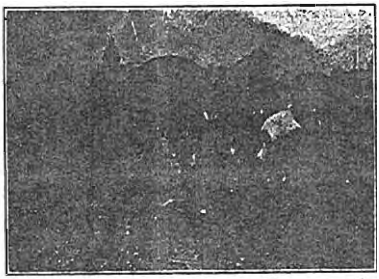
TRAIN DE LUXE AT TIENTSIN SETTLEMENT STATION

IMPERIAL RAILWAYS OF NORTH CHINA

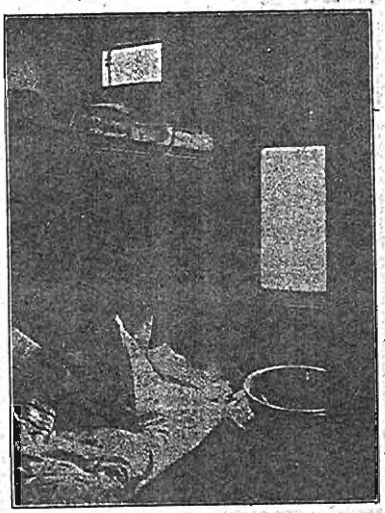
THROUGH SERVICE FROM PEKING TO MUKDEN, CONNECTING AT MUKDEN WITH THE SOUTH MANCHURIA EXPRESS FROM TRANS-SIBERIAN ROUTE: AT PEKING CONNECTION IS MADE WITH THE IMPERIAL PEKING-HANKOW RAILWAY FOR HANKOW AND YANGTSZE PORTS, AND INTERMEDIATE POINTS REACHED BY THE IMPERIAL CHEN-TAI LINE TO TAIYUANFU, THE TAO-CHING LINE, AND THE PEINLO RAILWAY TO KAIFENGFU AND HONANFU. CONNECTION IS ALSO MADE AT PEKING WITH THE PICTURESQUE KALGAN LINE, "THE ROAD TO THE GREAT WALL."

THE IMPERIAL RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING: THE CAPITAL, WITH ITS WALLS, PALACES, TEMPLES AND TOMBS.—TIENTSIN: THE GREAT TRADE CENTER OF NORTH CHINA.—TONGSHAN: THE LARGEST MINING AND INDUSTRIAL TOWN IN THE EMPIRE.—SHANHAIKWAN: WHERE THE GREAT WALL ENDS AT THE SEA.—NEWCHWANG: THE BUSY COMMERCIAL PORT OF MANCHURIA.—MUKDEN: THE ANCESTRAL HOME OF THE MANCHU DYNASTY. A MINIATURE PEKING, WITH ITS WALLS, IMPERIAL PALACES, TEMPLES AND TOMBS.



PEKING STATION



FIRST CLASS SLEEPING BERTH, TRAINS DE LUXE

THE THROUGH TRAINS ARE EQUIPPED WITH BUFFET AND DINING CAR SERVICE, AND A COMFORTABLE, MODERN TRAIN DE LUXE OF COMPARTMENT SLEEPING COACHES HAS BEEN PLACED IN OPERATION THIS SEASON TO CONNECT WITH THE THROUGH SERVICE OF THE TRANS-SIBERIAN AND SOUTH MANCHURIAN RAILWAYS.

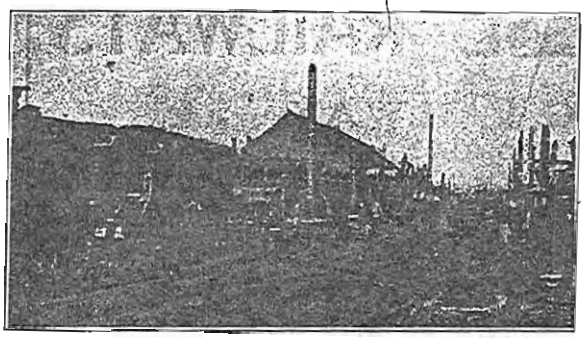
For further information apply to any office in America or Europe of

The Cie. Internationale Des Wagons-Lits, Thos. Cook & Sons, or Imperial Railways of North China

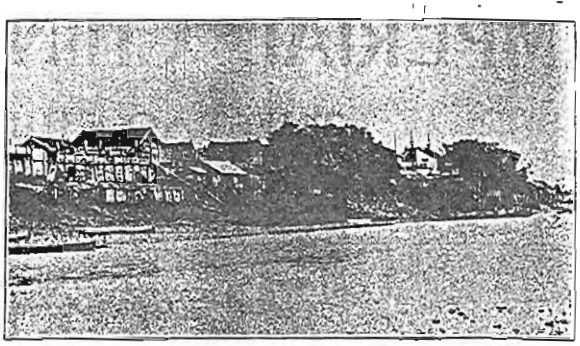
TIENTSIN, NORTH CHINA
J. E. FOLEY, Traffic Manager

IMPERIAL CHINESE RAILWAYS

KIRIN-CHANGCHUN LINE



CHINESE MARKET AT CHANG-CHUN



VIEW OF KIRIN FROM THE SUNGARI RIVER

THE FIRST SECTION OF THIS LINE IS NOW IN OPERATION

The Kirin-Changchun Railway.

We beg to notify the public that from the 1st day of the 12th moon, 2nd year of Hsuentung (Jan. 1st, 1911) the Kirin-Changchun Railway will be open to passenger and freight traffic by construction trains from Changchun to Coran, twice a day. This section is not yet formally opened to traffic; but passengers and merchandise may be conveyed in the construction cars at the tariff of thirty cents each person or per ton of freight without distinction of classes.

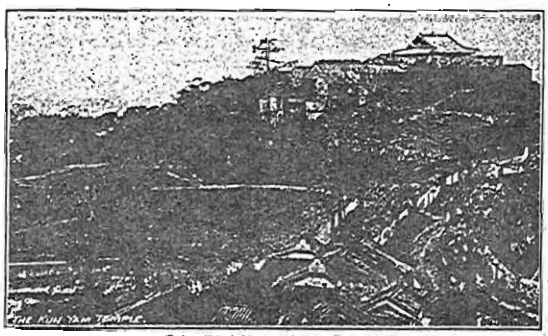
TIME TABLE

The Kirin-Changchung Railway

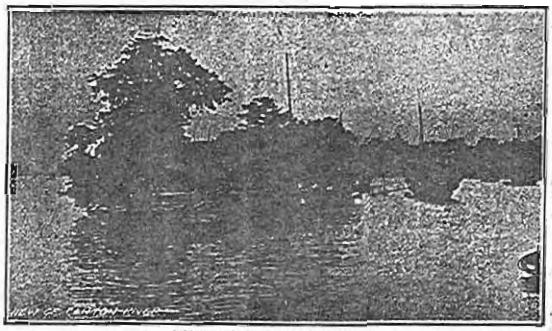
DOWN TRAIN			UP TRAIN		
Station	*No. 1*	*No. 3*	*Station*	*No. 2*	*No. 4*
	a. m.	a. m.		a. m.	p. m.
Changchung	7:00	12:00	Coran	10:00	5:00
Coran	8:17	1:17	Changchung	11:17	4:17

IMPERIAL CHINESE RAILWAYS

CANTON-KOWLOON LINE



THE KUN YAM TEMPLE



VIEW OF CANTON RIVER

PUBLIC TIME TABLE

IN FORCE FROM 24th APRIL, 1911, UNTIL FURTHER NOTICE.

Canton (Tai Sha Tou) to Shek Lung

Miles	STATION		Daily Passenger Trains. No. 1	No. 3	No. 5
			A. M.	P. M.	A. M.
	Canton (Tai Sha Tou)	dep	7.30	11.00	3 00
3 62	Shiok Pai	arr	7.39	11 09	3.09
		dep	7.42	11.12	3.12
7 90	Cho Pi	arr	7.48	11.23	3 22
		dep	7.56	11.26	3 26
12 08	Wu Chung	arr	8 07	11.37	3 37
		dep	8.10	11 40	3 40
17.00	Nam Kong	arr	8.21	11.51	3 51
		dep	8.26	11.55	3.55
21.67	Sun Tong	arr	8.37	12.07	4.07
		dep	8.41	12.11	4.11
23.61	Tong Mei	arr	8.46	12.16	4.16
		dep	8.50	12 20	4.20
28.64	Nga Yeo	arr	8 55	12 25	4 25
		dep	8 58	12.28	4 28
29.00	Sien Tsun	arr	9 07	12 37	4.37
		dep	9.11	12.41	4 41
32.20	Shok Ha	arr	9 22	12 52	4 52
		dep	9.24	12.54	4 54
34.77	Shek Tan	arr	9.33	1.03	5.03
		dep	9 37	1.07	5.07
36.24	Shek Lik Kon	arr	9.43	1.13	5.13
		dep	9.45	1.15	5.15
40.15	Shek Lung	arr	9.55	1.28	5.28

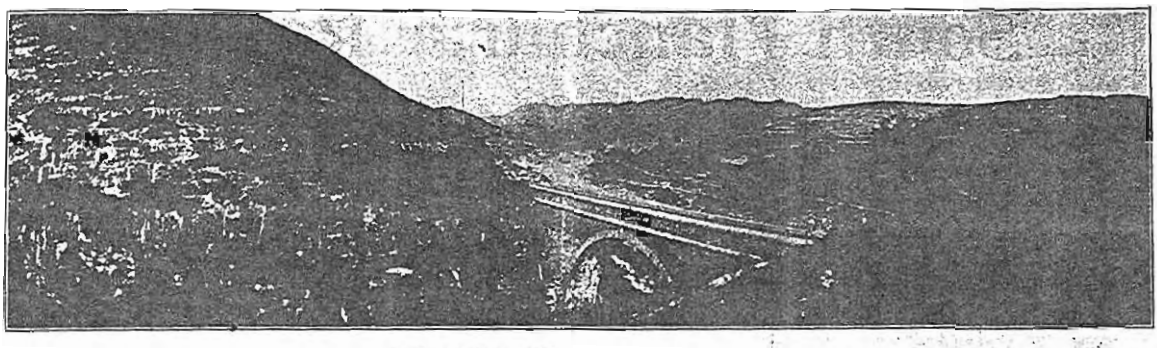
Shek Lung to Canton (Tai Sha Tou).

Miles	STATION		Daily Passenger Trains. No. 2	No. 4	No. 6
			A. M.	P. M.	P. M.
	Shek Lung	dep	7.35	11.05	3.05
3.81	Shek Lik Kon	arr	7.45	11 18	3.18
		dep	7.60	11.20	3.20
5.38	Shek Tan	arr	7.56	11.26	3.26
		dep	8.00	11.30	3.30
7.90	Shek Ha	arr	8.09	11.39	3.39
		dep	8.11	11.41	3.41
11.1	Sien Tsun	arr	8.22	11.52	3.52
		dep	8.26	11.56	3.56
.61	Nga Yeo	arr	8 36	12 06	4 06
		dep	8.38	12 08	4 08
16.54	Tong Mei	arr	8.45	12.18	4.18
		dep	8.47	12.17	4.17
18. 46	Sun Tong	arr	8 52	12.22	4.22
		dep	8.56	12.26	4 26
23.06	Nam Kong	arr	9.08	12.38	4.38
		dep	9.12	12 42	4.42
27.37	Wu Chung	arr	9 23	12.53	4.53
		dep	9.26	12.56	4.56
31.25	Cho Pi	arr	9.37	1.07	5.07
		dep	9 40	1.10	5.10
35.52	Shek Pai	arr	9.51	1.21	5.21
		dep	9.54	1.24	5.24
40.15	Canton (Tai Sha Tou)	arr	10.05	1.33	5.33

IMPERIAL CHINESE RAILWAYS

The Cheng-Tai Railway

(IMPERIAL GOVERNMENT SHANSI LINE—CHENGTINGFU TO TAIYUANFU)

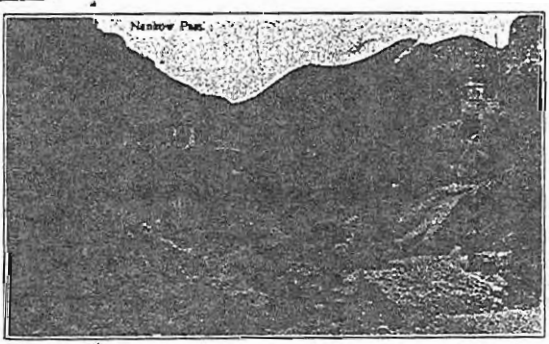


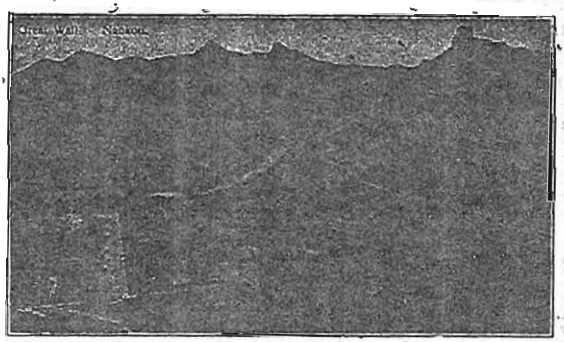
VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY.

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational center, and famous for the fine quality of its artistic embroideries.

The Peking-Kalgan Line

"THE ROAD TO THE GREAT WALL"





This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Empire. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

TAOTAI JEME TIEN-YU, Director General

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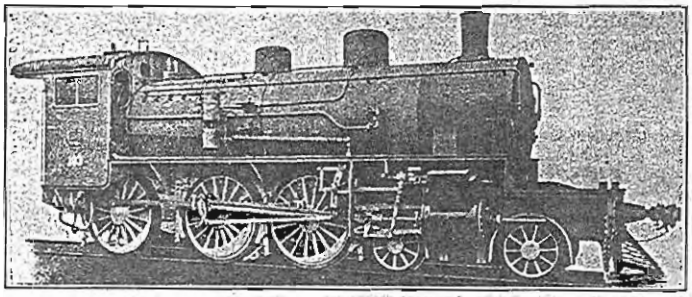

4-6-0 STANDARD GAUGE PASSENGER ENGINE. IMPERIAL TIENTSIN-PUKOW RAILWAY

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The Philippine Journal of Science

Edited by
PAUL I. FREER, M. D., Ph. D.

A Journal devoted to the scientific work done in the Philippine Islands by the members of the Staff of the Bureau of Science, and by other scientific workers.

PUBLISHED BY THE BUREAU OF SCIENCE OF THE PHILIPPINE ISLANDS

Volume VI began in January, 1911:

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Section B, Medical Sciences	3.00 U. S. currency
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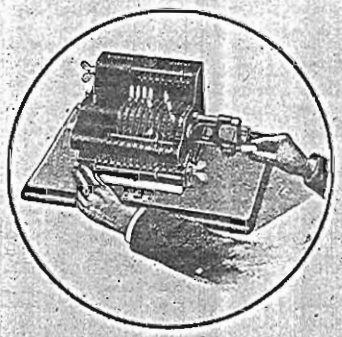
For The Busy Man Who Demands Accuracy



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THE FAR EASTERN REVIEW

VOL. VIII.—No. 10. MANILA AND SHANGHAI, MARCH, 1912. 25 cents, U. S. Cy.

Japan's Mining Industry

The World's Tea Trade

America's Export Trade

Sir FREDERICK JOHN DEALTRY LUGARD,
G. C. M. G., C. B., D. S. D., Governor of Hongkong, Recently Appointed Joint Commissioner of the United Territories of Nigeria.

Far Eastern Engineering and Industrial News

TRAIN ON THE BRITISH SECTION OF THE CANTON-KOWLOON RAILWAY

increased $22,631. This is partly explained by the fact that at the close of 1910 the stock of American kerosene was very low, large importations of oil being made soon after the beginning of 1911. These, if added to the actual amount imported during 1910, would explain some of the difference. However, the peculiar conditions existing in the oil trade during the year is accountable for some of the unfavorable showing.

The heavy decline in the importations of railroad materials is explained by the fact that the railroad company practically ceased construction during the early part of 1910, owing to lack of funds.

Opportunities for Manila Merchants.—As there are two regular lines of steamers between Amoy and the Philippine Islands and as approximately 75 per cent of the Chinese in the Philippines come from this district, it would appear that the merchants in Manila might do well to actively cultivate business opportunities near this port. The great amount of inland traffic shows the importance of Amoy as the distributing center for south Fukien. Philippine hardwoods would seem to offer an especially good opportunity, owing to the scarcity of such wood in this vicinity.

COMMERCE AND INDUSTRIES OF SWATOW.

[By Consul Charles L. L. Williams.]

Swatow-Chaochowfu Railway—Waterworks Construction.—The Swatow-Chaochowfu Railway reported a satisfactory year, having carried 800,000 passengers and 25,000 tons of freight. Unfortunately, the roadbed, rails, and rolling stock are all inferior, and if it is ever linked up with any of the trunk lines now under construction, it will have to be entirely rebuilt. A step toward this linking up is being discussed—a line from Chaochowfu, the present railhead, to Hweichowfu, 125 miles southeast of Chaochowfu, and some 60 miles northeast of Kowloon, the terminus of the Canton-Kowloon line. This project has received the hearty support of the Proviucial authorities and assembly, and it is quite possible that some definite step may be taken soon. Material must, of course, be purchased abroad.

A light "trolley" line—small cars pushed by coolies—is to be built from Chenghai, the magisterial city of this district, population 40,000, to Ampo, a city on the Swatow-Chaochowfu Railway with a population of 50,000. The principal object of this line will be to serve as a feeder to the railway, but there may also be considerable local traffic. The estimated cost is $43,800, which has been raised locally. No bridges will be built, the Han River being crossed by ferry. A proposal to build an electric line from this port to Tinghai has been abandoned.

Considerable progress was made with the waterworks during the year. The intake station is at Ampo, on the Han River. The water will be brought to Swatow through a 12-inch main gravity feed pipe line, the drop from Ampo to Swatow being about 10 feet. The contract for installing machinery, tanks, towers, pipe lines, etc., was awarded to a Hongkong firm. The waterworks and the local electric lighting plant are controlled by private Chinese capital.

FOOCHOW'S FOREIGN TRADE.

[By Consul Samuel L. Gracey.]

Canned-Good Factory—Nanking Exposition—Fruits.—In 1910 Foochow's first canned-goods factory was established. It is called the "Mai Lo Co.," and puts up a great many varieties of canned fruits, fish, and other local products.

The merchants of Foochow participated in the National Exposition held at Nanking in 1910, and the exhibit gave great satisfaction. Since the exposition closed the people, realizing the benefit derived from it, are cooperating with the provincial and local officials in founding a commercial museum for local exhibition of Fukien products at Foochow.

During 1910 the native fruit exporters had an exceptionally lucrative trade. Olives and oranges, the main fruit exports, were sold at high prices in the northern Provinces. Owing to the extension of the railway lines and other facilities in transportation, which have recently been introduced in the northern Provinces, oranges have a much larger field of sale, as they can now be carried to a greater distance before spoiling. The consumption of 1910 in the northern markets was over 8,000,000 pounds, as against 4,000,000 pounds in 1909, and of olives, 4,283,066 pounds, against 2,880,300 pounds in 1909.

Electric Lighting Company—Camphor Production.—A new electric lighting company was organized in 1910 by some influential Chinese. Two thousand four hundred shares of stock at $50 (Mexican) per share were issued. As the two old companies which had obtained permission to install works had both been found unsatisfactory, an official license was granted the new company on August 25, 1910, by the viceroy of Minche, to put up a much larger plant for lighting the whole city and suburbs. The Shanghai agents of the General

CANTON TERMINUS AND STATION OF THE BRITISH SECTION OF THE CANTON-KOWLOON RAILWAY

FAR EASTERN RAILWAYS

NEW SIBERIAN RAILWAY.—It is now proposed to construct a railway to the north of Lake Baikal in view of the possibility of the Za-Baikal line falling into the hands of an enemy and rendering the Amur line useless. This northern route would have the advantage of connecting Irkutsk with the Amur and pass through the more thickly populated areas. It will cross the Lena so as to give a western Amur connection. The cost is estimated at 10,000,000 roubles.

MEKLONG RAILWAY CO.'S REPORT.—The operations for the year show a large increase in revenue. Four fish-cars and one open freight car were added to the rolling stock. The following is the report presented at the last annual meeting held at Bangkok for the year ended December 31, 1911:

"The Directors have pleasure in presenting to you the Balance Sheet, Working and Profit and Loss Accounts of the Company for the year ended December 31, 1911. The Working Account for that period shows a gross income of Tcs. 333,281.04, and expenditure amounting to Tcs. 105,757.47 The Profit and Loss Account, after deduction of Debenture Interest, Concession, Redemption, Depreciation, and reducing Amalgamation Account, shows a net profit of Tcs. 143,152.42. To this has to be added Tcs. 10,227.92 carried forward from the previous year making the total amount available: Tcs. 153,380.34. The Directors propose to deal with this amount as follows: (1) To pay a dividend of 5%, Tcs. 111,500; (2) To pay Directors' fees, Tcs. 8,000; (3) To pay Manager's bonus, Tcs. 5,575; (4) To place to Statutory Reserve, Tcs. 6,478.87; (5) To place to Contingencies Fund, Tcs. 8,666.21; (6) To carry forward to next year, Tcs. 13,160.26. Total Tcs. 153,380,34.

THE PAKNAM RAILWAY CO., LTD.—The report for the second half of the year 1911 shows a net profit of Ticals 34,582.36 out of which a dividend of 5% was paid and after paying director and auditors' fees, managers' bonus and making an addition to the statutory reserve, Ticals 2,408.42 were carried forward. The dividend for the first six months was 9% making in all for the year 14%.

It is proposed to relay 5.04 kilometers of track with new steel leaving only a balance of nine kilometers to relay. Arrangements have been made with the Siam Electricity Co. to electrify the line from Hua Lampong to Klong Toi, a distance of 5 kilometers.

JAPAN RAILWAY REVENUES.—The total receipts on all lines during January was 7,522,970 yen, 3,689,410 yen of passenger fares and 3,833,560 of freight receipts, an increase of 660,240 yen compared with the corresponding period of last year. The total receipts since April, 1911, were 81,132,224 yen, an increase of 8,576,964 yen. An income of about 10,000,000 yen over the estimate by the end of the present fiscal year, which closes March 31, is anticipated.

THE PANAMA RAILROAD.—Freight carried on the Panama Railroad during the three months ending September 30, 1911, showed an increase of 86,678 tons, or 26 per cent, over that for the corresponding period during the previous year, the total for the 1911 quarter being 419,108 tons. Through freight going from Colon to Panama shipped from New York and other Atlantic ports amounted to 55,029 tons, an increase of 30,419 tons; from Gulf ports, 7,071 tons, an increase of 1,139; and from Europe, 25,257 tons, an increase of 9,199. Of the through-freight coming from Panama to Colon, New York and other Atlantic ports took 44,568 tons, an increase over the 1910 quarter of 22,718. Gulf ports took 4,902 tons, against none in the year before; and 14,072 tons went to Europe, a decrease of 1,526.

CHINESE RAILWAY EXTENSION.—An agreement has been concluded between the Chinese and Japanese Commissioners at Mukden, according to Consul General Fisher, regarding the extension of the tracks of the Peking-Mukden line across the tracks of the South Manchurian Railway and the removal of the Mukden station of the former railroad from its present position to the end of the proposed extension. The Chinese Government agrees that the Peking-Mukden Railway Administration shall build a line between the proposed new station and the station of the Manchurian Railway Co., in order that the lines may make good connections and thereby extend traffic. The Japanese Government agrees that the South Manchurian Railway Co. shall raise an embankment and build a bridge over the extension of the Peking-Mukden line at the point of intersection of the two roads.

F. M. S. RAILWAYS—The Department will expend over $5,000,000 (Malaysian dollar—$0.567 American currency) on new construction work. This includes the Pahang-Kelantan line, the extension northward to Kedah, the completion of the Kuala Selangor line, the deviation of the main line from Kuala Lumpur to Salak South and a line to the Rawang coal field. Seven locomotives ($140,550), 100 goods wagons ($147,950), and additional passenger stock ($169,388) will be purchased.

RAILWAY FERRY BOAT FOR THE SUNNING RAILWAY—This vessel has been purchased for the purpose of carrying trains across the Southwest River at Niu-wan. It is 350 feet in length, 55 feet wide, and is capable of carrying 15 cars.

FORMOSAN RAILWAYS—A night service was inaugurated by the Imperial Taiwan Railways in December.

OBITUARY.—A cable from London under date of February 14 announces the death of Mr. E. S. Lindsay, M. I. C. E., formerly chief resident engineer of the British section of the Kowloon-Canton Railway, at Grindelwald, Switzerland, where he was enjoying a vacation.

The deceased was a leading British railway engineer who served on construction work on railways first in Spain and later in India. He was Acting Chief of the South Indian Railway in 1908 when his services were lent to Hongkong as Chief Resident Engineer of the British section which position he held until December, 1911, after the inauguration of the section. When he left for Europe, in recognition of his continuous service without a vacation, the Hongkong Council voted him a substantial sum and he was taking rest before undertaking any new position when the sad event occurred. Mr. Lindsay was regarded as one of the most progressive of British railway engineers and his passing out is considered a severe loss to the engineering profession.

RUSSIAN RAILWAY REVENUES—The following is an excerpt from the report of the Ministry of Communications for 1910. The gross income of all the lines was $495,422,087, or $33,614,057 more than in 1909. The expenses for 1910 were $324,248,258, or $5,238,848 less than in the preceding year. The net profit was $169,542,293, or $38,281,850 more than in 1909.

The net profit on the State Railways was $106,912,319 and on the private ones $62,629,923. The Southern Railway gave the most profit, $15,478,772; next came the Southwestern Railway, with $15,277,943; the Moscow-Kursk and Nizhni-Novgorod Railways gave $6,117,030; the Cis-Visla Railway, $5,703,153; and the remaining railways less than $2,575,000.

The State Railways in Asiatic Russia, the Tashkend, Siberian, and Middle-Asiatic Railways, enjoyed an income larger than their expenses. The Trans-Baikalian Railway gave a loss of $5,218,092.

From the private railways the largest profit was made by the Vladikavkaz, Southeastern, and Moscow-Kief-Voronezh Railways, $8,391,704, the Moscow-Kazan Railway, $7,717,208; the Moscow-Windau Rybinsk Railway, $7,089,597, and the Warsaw-Vienna Railway, $5,623,280. The remaining railways gave less than $515,000 profit.

JAPANESE RAILWAY CONSTRUCTION.—In discussing the railway program Vice-President Hirai of the Railway Board stated that while the Osaka Harbor Railway, including a northern and southern line, was under consideration in connection with the harbor improvement and that the southern line was adopted, no active construction was anticipated for the present.

A supplementary budget will be submitted by the Government to complete the construction of the Hokkaido railways as the cost of material and labor had so advanced that the program providing for the construction of 1,000 miles of line to cost 30,000,000 yen to be completed in 1914 could not be carried out.

The Atami line of railway is being surveyed and an estimate of 300,000 yen was submitted for 1912. This is a proposed circuitous line connecting Odawara, Atami and Yugawara districts.

It is estimated that the Railway Board will purchase during 1912 railway supplies to the value of yen 10,000,000.

THE KIANGSI RAILWAY LOAN.—This company, according to latest advices, is negotiating a new loan of four million taels with Japanese capitalists. Previous to the revolution an application for a loan from Chinese bankers was vetoed by the Board of Communications. This company's original plans included the construction of lines in Kiangsi from Kiukiang to the Kwangtung frontier via Nanchang, a distance of 460 miles with branch lines to Fukien Chekiang and Yuanchow.

SOUTH MANCHURIA RAILWAY DIVIDENDS.—Due to the bubonic plague the profits for the year 1911 amounted to 1,300,000 yen against an estimate based on the business of 1910 of 3,500,000 yen. The estimate for 1912 is placed at 1,500,000 yen.

KOREAN RAILWAYS.—Mr. Oya, chief of Railway Affairs of Chosen, states that the railway loan, floated in 1911, amounted to 8,000,000 yen, and the profit for the same year totaled 600,000 yen. If the loan be depended on till the end of 1915 as the source of the funds, a profit of about 2,000,000 yen could be realized from 1916, but the delegate did not think any higher profit would be difficult. The charges were high in comparison with those at home, but not so high when the high amount of expenses and the relations with the connected railways are taken into consideration. The Authorities were planning a reduction of charges. As to the relations of immigrants and the railway no special accommodations had as yet been made, as the number of immigrants traveling in a body did not at present exceed 20.

Cravens Ltd., Sheffield	£37,170-1	£28,803 (Middlesbro)	12 weeks, and 40 every 4 weeks.
Nesselsdorfer Waggonfabrik	£20,388	£14,828 (Hamburg)	26 weeks and 100 in 4 weeks.
Officine Metallurgike Togni, Brescia. (agents, [illegible] Diana and Co.)	£[illegible]-7-6	£22,794-14 (Genoa)	50 in 26 weeks and 25 every 4 weeks.
La Construction [illegible] Manage. (agents [illegible] Howarth [illegible] ine, Ltd.)	[illegible]	£21,241-13 (Antwerp)	28 weeks and 54 every 4 weeks.
Brush Electrical Engineering [illegible] (agents [illegible] arth Erskine Ltd.)	[illegible]	£21,573 (Middlesbro)	26 weeks and 50 every 4 weeks.
Ditto.	[illegible]	£21,578 (wheels at Middlesbro)	

Volume IX

June 1912

Sunning - Kongmoon Railway, The extension to Kongmoon had been completed. The line was now 67.5 miles long. The equipment consisted of 7 American & 5 *(most sources say 3 only)* German locomotives, 18 passenger coaches, about 70 box cars and about 70 flat cars, most made in America.

Canton - Swatow line a report that the project was "on foot". General Chan Kwing Ming (ex Provincial Assembly member) had proposed this line and millionaire Cheng Pat Sze had engaged a foreign engineer to survey the line. Mandarins' red tape had stalled progress but the project had recently been revived.

Canton - Hankow Railway, The Wuchang - Yochow section survey had just started. There were three parties, each with six foreign engineers as well as 20 native engineers.

Shantung Railway Co. Report from Berlin that a dividend of 6% preferential shares & a further dividend of 5% had been declared by the company.

Canton – Macao Railway The destiny of this railway now lay with a group of local Chinese who were advertising for capital. The line would be 70 miles in length running due South from Canton to the Macao boundary. A 30 mile branch line was also planned to connect with the Sunning Railway at Chengtsun.The Southern terminuswould alsobe within 5 miles of a new commercial port at Heungchow which was then already under construction. The article continues with an analysis of the commercial prospects for the line.

Canton – Amoy Railway. Consideration for the construction of this railway had been going on for a number of years and a survey had been conducted in 1906. The line was to be built by Chinese syndicates from Kwangtung and Fukien Provinces although no advance had been made since the survey. It was to consist of 275 miles and 100 miles in Kwangtung and Fukien respectively passing though thickly populated country in a high state of cultivation. It would serve several important cities which were then only served by inferior waterways. The western terminus would be at Shek Wan (opposite to Shek Lung) both of which had large populations. The article continues with an analysisof prospects for the railway.

Chinese Railway Project The American Consul in Hong Kong had persuaded American manufacturers to send representatives (including locomotive company reps) to Mengtze and Yunnanfu in connection with the proposal to construct a line from Yunnfu to Lanchowfu in Szechwan Province. Another railway from Yunnanfu to Nanning in “Quang Se” (Kwangsi) Province was also under consideration to compete with the French built Yunnanfu to Haiphong railway whose freight rates were “excessive”.An analyis of freight prospects and trade routes into Yunnan follows. The aricle also analyses the cause of high freight rates on the French Ynnan line and also reports that the 'light construction” of the line has made it prone to disruptions because of heavy rainfall damge to the track.

Indo-China & South China Railways. This article reports that the Acting Commissioner of Customs at Lungchow, P. C. Hannson, had published an annual report in which he discussed new French aspirations for extending the Hanoi-Langson line and their influence to Nasham and Binhdao on the Sunki River. This was instead of following an earlier plan of extending this line to Lungchow and Nanning.

Kirin-Changchun Railway The Japanese Government had indicated that the Kirin-Changchun line was to be “built by China” and a connection would be made between this and the “Japanese” line. The construction had been

suspended due to the “outbreak of pest” and the difficulty of finding an able Chinese manager. The Chinese officials and specialists engaged had proved to be poorly qualified and had little skill and experience. These defects “were common to other railway lines undertaken by Chinese and were common to other lines”. The line was expensive having already cost 3 million Yen and about half the line had been completed. With reference to the Kirin-Hoiryong line, the time for construction was to be fixed by the Chinese Government after consulting the Japanese.
Mukden. On January 15 (1912) traffic had commenced on the new extension of the Imp. Railways of North China line across the track of the South ManchuriaRailway to the new station which was to be named Shenyang, whilst the old station was to be called Huangkutun. This was in line with an agreement concluded in autumn 1911 between the Japanese and Chinese.
Formosa An application had been submiited for the construction of a private railway in the prefecture of Ako.

July 1912
Types of German Locomotives in use on Chinese Railways - Henschel & Sohn, Cassel Seven photographs: 0-6-0 tank built for Hanyan Iron 7 Steel Works, 0-6-0 T for the Sunning Railway (one of three which were later were modified and provided with tenders), tank locomotive for the Tientsin-Pukow (Tsin-Pu), Northern Section, Railway, 4-6-0 Goods locomotive for the Shantung Railway (including specifications), 2-6-0 Goods locomotive for the Tientsin-Pukow Rly (w/specifications) and a 4-6-0 Passenger locomotive for the Chekiang railway (w/specifications)
Sun Yat Sen's Railway Dream A lengthy editorial about the plans of ex President Dr. Sun for a network of new trunk railway lines all over China.
Kaiyuan-Taolu Light Railway A report on a Fengtien Assembly debate on where to locate the terminus of this line.
Military Lines in Kwangtung A report that the Tutuh (都督 military governor) had decided to build a line connecting the provincial capotal with surrounding districts .
Tientsin-Pukow Railway A report that since the southern and northern sections had been connected through trains had commenced.
South Manchuria Railway Shareholders had been requested to pay a third instalment.
Chekiang Railway Debentures A report that new floatation had been authorized by shareholders.
The Shantung Railway Profits had been announced and a dividend declared.
Canton-Hankow Railway The survey of the Wuchang-Yochow section had begun under two groups of surveyors.
Peking-Hankow Railway Receipts The financial figures for March had been News.
Kowloon Terminus The government had made a purchase of reclaimed land for the new railway terminus .
Proposed Railway from Chaochowfu to Hweichowfu. Consular reports stated this proposed line was under discusssion.

August 1912
Railway Advisers An editorial discussing the appointment of various froreign advisers to various Chinese ministries. This includes suggestions on who might be best suited as Railway advisers.
Sidelights on the Management of Chinese Railways – The Shanghai-Nanking Railway This railway had attarcted widespread criticism from the Chinese because of its excessive cost which had included higher loan flotation

charges and other purchasing commissions than any other railway project in China. In 1907 the line had started its operations under a "competent" foreign traffic manager with the line running at that time only 90 miles as far as Wusih. Since that date the operations had been gradually extended until the whole line to Nanking had been opened in April 1908, a total distance of just over 203 miles. The operating costs are listed in a table up to and including the year 1911 and the first half year of 1912. The latter half year period had seen the best increase in earnings since the opening of the railway.The article then continues with an analysis of the railway's operating costs and returns and these are compared with figures from Indian railways as well as Imperail Railways of North China and the Peking- Hankow lines' corresponding earnings. The article also discusses the friction between foreign workers and Chinese employees of the lines constructed in China with foreign loans, particularly about the how the foreign employees considered that "too many Chinese workers were employed which resulted in "inefficiencies" whereas the Chinese side of the argument was that the foreigners were paid too much and that the lines were the property of the Chinese Government and should be run by the Chinese who earned lower salaries. The success of the Shanghai-Nanking line had overall been good and this was due to the efficiency of the Managing Director Mr Chung-Mun-yew and to his British General Manager Mr A.W.U. Pope. The articles in cludes 2 photographs, one of Mr Chung Mew-yew with A. W. U. Pope and the second the Locomotive Superintendent, E. J. Dunstan.

Moscow-Peking Railway The Russian Premier, Mr. Kokovtzev was examing plans for the construction of this railway and had promises to guarantee the interest on the capital needed for its construction. Two alternative routes were under consideration: one "the Northern route" utilising the existing Trans-Siberian line as fae as Tcheroniginsk or Irkutsk and also part of the Baikal line to Kiakta whence it would proceed to Peking via Chingchiakow. The other was the "Southern" line was for an entirely new construction from Moscow passing through Semipalachensk via Suizuran, Samala and Orenburg to Kiakta and thence to Peking.

Effect of the Yunnan Line .Yunnan province was fast becoming a bone of contention both politically and commercially now that the French, British, German and even American firms were competing to supply equipment for projected railways and mines. This situation had developed because now that the new French-built railway had opened up access to the sea for the people of Yunnan they remained divided into the an enterprising people on the one hand but a "phlegmatic unwilling population" on the other.

South Manchuria Railway The receipts figures for the half year ending March 31 1912 are presented indicating that net profits had increased Y336,215 over the corresponding period for the previous year.

S.M.R. Traffic Returns The South Manchuria Railway traffic returns for July gave a daily average of Y35,217, up Y8,569 on the previous year.

S.M.R. Box Cars 16 boxcars had been completed at the Shahokou Railway workshops.

S.M.R. Locomotives 2 railway locomotives were completed at the Shahokou workshops on August 3rd. and these had passed trial runs. this brought the total number of company's locomotives to 256.

Canton-Hankow Line The Civil Governor ar Wuchang had instructed the Hupeh Government Bank to give details of the funds collected for the construction of this railwayand also the Szechuan-Hankow Railway.It was to include a list of lands bought and also members of the "old staff" of the railway office. Mr Tam Yun Fung, Director in Chief of the Canton-Hankow Railway intended to divide the line into three sections on which work would

commence simultaneously. These were Wuchang-Ngokchow, Ngokchow-Wingchow and Wingckow to Canton. Mr Ching Ming Chew would be manager of the first section, Chau Yau-loong manager of the second section and Jim Tin-yau manager of the third section as well as his duties as Deputy Director-in Chief of the Railway.

Mukden-Itungchou Railway The old scheme for connecting Mukden with Kirin via Hailungcheng, Itungchou and Shuangyangho had been revived by Chairman Liu of the Chinese Guild according a report in the "Manchuria Daily News".

Burma-Szechuan Line A Yunnan resident surmises why the Brtitish had occupied Pienma a region on the Yunnan - Burmese border . This, he claimed, was because the original route selected for a Burma-China railway had proved too difficult in engineering terms and the British were seeking an easier route.

Light rail Over Tumenling Pass A report that a light railway down this pass was ready for service. It was part of the Kirin-Changchun line.

Shanghai-Nanking Railway Financial returns for the half year ending June 1912.

September 1912

China's Railway Problems - An Analysis of Dr. Sun Yat-sen's Scheme , Illustrating China's Difficulties in Future Railway Extensions. A massive in-depth study and opinion editorial by the Magazine's publisher & editor, Geo. Bronson Rea. 11 pages with two full-page maps.

China's Railway Engineers An editorial calling for the development of a pool of Chinese senior railway engineers especially since the chief engineers have all too often been foreign appointments , costing the government financial losses.

Kirin-Changchun Railway A report that this line would be ready for serivice in October.

Closing the door in Yunnan - the Operation of the French Yunnan Railway The railway had opened to traffic from Laokay to Yunnanfu in April 1910. This was 287 miles of metre gauge mountain line, a tribute to French engineering skill and a "momument to perseverance and ingenuity of man in one of his most disheartening combats against the combined forces of nature". The articles discusses the prospects for the line which had been constructed with a view of building up the port of Haiphong at the expense of Canton. The line was, however, not being used willingly by Chinese traders because of the very high charges and French taxes being imposed in an attempt to provide a return on the very high construction and maintenance costs. Reports suggestedthat goods were still being imported into Yunnan and Kweichow by the old trade routes using the rivers and mule packs through Burma, Bhamo and Tengyueh. The French were not making matters any better for the railway's prospects by charging 20% of its full import duties on goods merely transitting Indo-China. The American Consul-General of Hong Kong had even suggested that the line's projectors were considering building a new line from Yunnan to to Nanning on the Yeo River in Kwansi as means of avoiding the high freight rates charged by the Indo-China line. The article continues with a full description of the freight rates and taxes charged with an analysis. The French railway authorities defended these high charges as necessary to secure a fair return on the investment to meet the high costs of repairs and maintenance. Each year the rainy season caused numerous serious landslips creating havoc and paralyzing traffic for weeks and months. Floods also carried away several steel bridges which had to be replaced. 13 photographs of line-side scenes and stations including a train crossing a

flooded Ta Chuang Plain in 1911, several railway bridge scenes including the famous Faux Nam-Ti bridge and two views of Yunnanfu station. Two maps: one showing the Yunnan line from Yunnanfu to Lao Kay and a FER map of South China showing existing and principal projected lines.

The Kiangsu Railway A report that their directors had complained of unfair treatment by the "British Corporation" (probably the British & Chinese Corp) over having to pay interest of 5% on loans and yet had noney deposited with them only earning 2% .

The Yuet-Han (Yueh-Han) Railway the Szechuan directors had suggested handing over control of this railway to the government. The Canton-based shareholders, however ,still opposed this)

The Rape of Mongolia- A large map illustrating Russia's Asiatic Railway Program and how it interreacted with China's planned lines and map of China's plans (repeated from March 1910) .

The Kwangtung Section of the Yueh-Han or Canton-Hankow Railway This article reports renewed activity in building this line which then only operated to the village of Lai Tang ,67 miles North of Canton. Grading and bridging was almost complete up to mile 112 except for a portion between mile 70 and 85 where native opposition was delaying matters. The Kwangtung Mercantile Administration of the Yueh-Han Railway Co. Ltd. had been organized with Provincial government assistance in abou1906 to take over construction of the line with a capital was $40 million (Canton currency). Their aim was to construct that part of the railway which passed through Kwangtung Province. The Kwangtung company shares had been placed at $5 local currency and only shareholders were entitled to be employed in building and operating the line. The 1911 disturbances over the Government's stated intention of taking control of trunk lines had however stopped work on this line and there was now uncertainty and disagreement as to the administration of the line The Governor-General had called for the company to seek a a third payment on shareholders' stocks but what this would nett for the company was doubtful. The first and second installation payments had been $1 and $1.50 in 1907 and 1909 respectively. There was much opposition to the call for this call for a third payment and the company was therefore seeking loans. The line up to that tiome was open to Samshui (branch line) and North to Wong Shek. There were also plans for branch lines to be constructed to connect up with the Canton-Kowloon line and to the Sunning Railway. The management of the line had been placed under Dr. Jeme Tien-yow. One small sketch map showing the existing and planned route of the line within Kwangtung province.

Tientsin-Pukow Railway, Much progress had been made during the year and a service was already available between Peking and Shanghai via Pukow and Nanking although the Yellow River bridge near Tsinanfu in Shangtung Province had not yet been completed. The bridge was now under construction. The article describes a journey from Shanghai, first using the Shanghai-Nanking express. At Nanking an overnight stay is made at the Bridge House Hotel before an early morning departure by launch across the Yangtze to the Pukow terminus for the 0730 am train departure. Hsu Chow-fu is reached between 7 and 8 pm where a change is made to the cars of the German section where he settles down in the convertible sleeping accommodation for the night. The train does not leave however for the onward journey until 7 am when it starts the 200 mile journey to Tsinanfu. Meals are served in the coupės because there was no dining car. This is awkward if there are several passengers sharing the limited table space. In the evening the train reaches Tsinanfu just before dark and here the night is spent in the comfortable Hotel Trendle. At 7.30 the next morning the train

departs for Tientsin but after only 15 minutes it is necessary to disembark to cross the Yellow River. The impressive 4050 ft long bridge under construction can be seen. The train leaves the northern bank at 9 am. Tientsin Central station is reached at 7 pm from where it "is better" to transfer to the Peking to Tientsin train rather than face a tedious long rickshaw journey to the British Concession. If the traveller is continuing on to Peking he will overnight in Tientsin before taking the 8.10 am train or the later 3.45 pm train. This journey is just over two hours. The overall journey is therefore hardly faster than taking the steamer from Shanghai to Tientsin but this would improve once the Yellow River bridge had been completed.8 photographs of stations and bridges (under construction) and one sketchmap of the line.

Peking-Kalgan Railway and its Extension, This reports how Dr Sun Yat-sen had traversed the line in September in order to get better acquainted with China's railways. The line was now open for traffic over 201.73 miles, the then terminalbeing at Yangkowhsien, the distance to Kalgan being 123.89 miles. Since opening October 14 1909 the receipts were improving from initial losses. The Peking - Mentoukou 16 mile branch line to serve the coalmines was also doing well. The cost of operating this railway was however greatly increased by the need to break trains to ascend the steep Nankou Pass. This section used mallets for passenger trains and geared Shay locomotives for freight. Mr Kwang King-yang was now the Engineer in Chief who took special care on this section because of the dangers of landslides. At Chi Ming Shan there is a short 3 mile spur line to bring coal from the railway's mines. The article includes a table of financial results for the period 1909-June 1912. Photographs of Jeme Tien-yu, K.Y Kwong Engineer-in-Chief, C.T Shar, Traffic Manager and Kuan Mien-chun managin Director.

October 1912

Chefoo-Weihsien Railway, A meeting hd been held at Chefoo in September to discuss the construction of this line. A company had been formed for this purpose three years earlier but sufficient funds for the building of the railway had not been raised.$15 million was needed for the 330 kilometre line.

Szechuen-Hankow Railway, Szechuanese shareholders had agreed that the central government would own and construct the Ichang-Kweichow section of this railway. All the properties and materials would be turned over to the government and the remaining funds owned by the Szechuan Railway Company would used for developing other industries.

SMR Traffic Returns, the monthly returns for September were Y931.664, a decrease on the previous year.

China's Provincial Railways, the British Minister had through the consuls advised British subjects that the Chinese Foreign Office had decreed that loans contracted by foreigners to provincial companies were not valid unless sanctioned by the Central government.

Kiangsi Railway, Japanese company To-a Kogyo Kaisha had at last succeeded in arranging a loan for this railway after many failures. The loan was for Y5 million at 6%.

South Manchuria Railway Shops Works on the shops at Dairen had commenced in 1908 and a special engineer had been sent to England to purchase the materials for 13 buildings plus fittings and machinery. These had been brought to Dairen in 1910 and 1911 in 21 steamers. The total cost of the shops was $2,250,000. Theywould have the capacity for repair of 7 locomotives and 36 passenger cars. They were also constructing cars for Manchuria-Korea express as well as Dairen street cars. 6 locomotives and

various rolling stock were constructed there in 1911.
Hunan-Canton-Hankow Railway, Work on the Changsha - Chuchou section of this railway had been proceeding but in the "usual leisurely manner". Following the Imperial Edict, promulgated in May, nationalizing the trunk lines the management had be anxious to demonsstrate substantial achievement as an argument against the impending foreign loan. With ther assistance of improvised trestle bridges they were able with considerable difficulty to run a train from Chuchou to Changsha on May 28 and declare the line open. A few days later, however, the embankment collapsed 7 miles from Changsha and there were other breakdowns elsewhere. Services were not resumed until 10 September since which there had been one passenger train daily each way. At year end only 3 bridges out of a total of 40 required had been erected. The remainder were temporary trestles. The whole line is badly laid and far from safe. The 33 miles between Changsha and Chouchou take the train over 2 hours as a higher speed would be too dangerous. Over 5 million taels had been spent which included the cost of 4 locomotives and rolling stock and yet receipts were only a $100 per day.At the Chuchou end the line had been connected with the Ping Hsiang line so that coal from the mines could be carried by rail to Changsha instead of by boat, however these hopes had not been realised because of all the problems with the line and also a lack of shipping facilities.
Bridge Over The Yellow River On The Northern Section Of The Tientsin-Pukow Railway, This article is an account of the construction of the Yellow River bridge near Tsinanfu and expected to be completed by December 1912. It was to be 1,255.2 metres in length (4,180 feet) and built on 11 piers. The cost was between 10 and 12 million German Marks. The bridge, which is on the German controlled Northern Section, was being built by Maschinenfabrik Augsburg-Nurnberg.The Resident Bridge Engineer was Mr Karl Preiss and the assistant Engineer H. Pluckham. There were originally some 15 foreign engineers engaged on the project. 19 photographs of the bridge in various stages of construction, including one of Dr. Sun Yat-Sen visiting the bridge and 1 engineering drawing of a cross section of a pier.
Atlantic Type Express Locomotive for Chinese Government Railways, A whole page description, including 1 works photograph, of a Kerr Stuart and Co locomotive built for the Taokou - Chinghua line. The locomotive had been designed by Mr. Donald Fraser who was Locomotive Superintendent of the railway. The article includes detailed dimensions and specifications.
Chinese Government Railways - Peking-Mukden Line Invitation to tender for wooden sleepers, timber cross frames and bridge ties.

November 1912
Dr Sun Yat Sen's Railway Scheme, A three page editorial discussing the merits and practicalities of Dr Sun's "dream" of developing and unifying the country by means of his plan for a country-wide system of railways in accordance with his published "scheme". Although many commentators of the time had dismissed Sun's plans as a wild and unrealistic dream with no prospect of succeeding this editorial generally supports Sun's ideas, notwithstanding that there were tremendous obstacles to overcome. 1 photograph of an ALCO 4-6-0, No 620 built for the South Manchuria Railway.
Reported Belgian Railway Loan, Announcement of a £10 Million loan from a Franco-belgian syndicate for the construction of a railway from Honan-fu and the present terminus of a short line between Kaifeng-fu and Sian-fu, a north-west extension to Lanchow-fu and also an eastwards extension to the coast at the undeveloped port of Haichow-fu. This line would cross the Pukow-Tientsin line near Hsuchow-fu. A Chinese company had already constructed

about 30 miles of line westwards from Honan-fu which was almost ready for traffic but the Government had not approved of this and were not responsible for any losses incurred by the shareholders. This line and possible loans had long been under discussion.

Kirin-Changchun Railway, A report that this railway had opened to passenger and goods traffic on October 21st. The line is 78 miles long and partially financed by a loan from the SMR under a Japan/China agreement made in 1907/8. Japan would nominate Chief Engineer and Treasurer with the remainder of the staff appointed by the responsible Gen. Manager appointed by the Chinese Govt. It was understood that the Chinese had provided about half the cost of the 4 million Yen cost. The line, built to standard gauge, would be a feeder for the SMR railway as well as to some extent tothe Russian CER via the close stations of Kuanchengtsu (CER) and the SMR Changchun station although the differences in gauges would present some disadvantages. The current Director-General was General Sun To-yui, who had succeeded Li Fen-nien who had earlier replaced the first Director, Mr. Fu.

Antung-Mukden Line, This was a line of light railway, 2ft 6 in. gauge riginally built by the Japanese Extraordinary Railway Corps during the Russo-Japanese War. The line, originally about 183 miles in length had been reduced in length by about 18 miles following its reconstruction to standard gauge bewteen 1909 and 1911 (completed Nov 1st 1911). The article continues describing the trading conditions and types of goods carried on the line between Chosen in Korea to Mukden. Passenger traffic, which formerly travelled from Japan to Mukden via Dalny, now used the line after first travelling by steamer from Moji to Fusan where they boarded trains taking them directly to Mukden on the Chosen Railway.

Articles of the Szechuan Hankow Railway, Following negotiations beteen Szechuan officials and the Ministry of Communications the policy of Govt ownership of this railway had been agreed upon. Four terms of the agreement are listed.

The Tientsin-Pukow (Tsinpu) Railway,This is a two-page report by the Japanese Commercial Commissioner about the effect of this railway in relation to trade in North China. He discusses the freight rates and how on the Southern Section the old-fashioned likin taxes were not being collected on goods carried between Tienstsin and Pukow but they continued to be charged on other methods of transport such as by canal. There are also paragraphs on the effects of the railway on trade at Chinkiang, Tsingtao and Tientsin with a concluding paragraph on the overall future prospects of the Tsinpu line. He rates the prospects for the Southern Section as good whilst the Northern Section would probably prosper following future expansion of trade at Tsinanfu, which had only recently opened to international trade. This was surely likely to occur because the Tsinpu line now had a direct junction with the Tsingtao line (at Tsinanfu).

South Manchuria Railway, A report detailing the latest return for locomotives and rolling stock on the S.M.R. These were 2 inspection locomotives, 69 Double-ender tank locomotives, 4 American type, 35 Prairie Switchers, 30 Ten-Wheelers, 7 Pacifics and 108 Consolidation type, totalling 255. There is also a list of carriages and wagons totalling 2,715. The return also lists principal bridges, tunnels, traffic returns and capital expenditure.

Kowloon-Canton Railway, The Hong Kong Colonial Secretary had announced the costs required to complete the construction of the British Section of the KCR and to acquire additional locomotives for the line. A public competition had not been organized for designs for the terminal station at Kowloon because it was thought that Mr Hubback of the Federated Malay

States service would undertake the task more economically.
Shangahai-Nanking Railway Returns. A table showing the railway's returns for the week ending November 2, for the past 4 weeks and 45-46 weeks, Comparison of 1911 and 1912 figures.
Szechuan-Hankow Railway General Li Yuen Hung had ordered that the accounts be squared so that work could begin. Mr. Linow the German Chief Engineer of the Tsinpu line had been appointed as superintending engineer of the Hankow-Szechuan (Ichang) line. It had been decided to nationalize the line.
The Hukiang Line Work on the Hunan section of this line had resumed according to a telegram. It had bee interrupted by the revolution. Eng. in Chief Mr. Collinson and his party were said to be at work on the northern end near the Hupeh border whilst at Chenchow in the south Mr. Dees and party were surveying.
Tientsin-Pukow Line The opening ceremony of the line was due to take place on December 1. The Yellow River bridge would be handed over to the Chinese authorities on November 16.
Light Rail Service at Kaiyuen, Permission for the extension of the existing light rail service at the Railway town of Kaiyuan had been granted to the applicant, Mr. K Kondo of Sung Mow & Co on Sept 29.
Yellow River Bridge The last bolt had been riveted on Nov 16 in the presence of the Governor of Shantung and the Chief Engineers of the German and British sections. Regular thru traffic would commence on Dec 1 when the Minister of Posts and Communications would open the line.

December 1912
Yellow River Bridge Repeat report about completion of the bridge on 16 November. This report contains additional names of the guests present .
Locomotives - Hannoversche Maschinenbau-Actien-Gesellschaft (Hanomag) This article provided by the General-Agents for China, H. Diederichsen & Co.shows four locomotives built by Hanomag. The first is a small locomotive for construction purposes, the second a "fireless" tank engine. Figure 3 shows a 4-6-0 tender locomotive (less the tender) designed for the Tientsin-Pukow Railway. Fig 4 is of a locomotive built for Java.
China's Trunk Lines, The Ministry of Communications had proposed four trunks lines, two north-south and two east-west. The Cabinet gave their approval. The first was for a cenral longitudial line from Mongolia through Peking and Shansi to Hankow and thence to Chiulung. Second was an eastern longitudial line from Manchuria thru' Chihli, Shantung, Kiansu, Chekiang and then to Fukien and Kwangtung. Third wasa northern latitudial line from Haichow thru' Honan, Tungkuan and Kansu and thence to ti Ili meeting with the Central Asiatic Railway. Fourth was the central latitudial line from the Nanking terminus of the NSR passing thru' Wuchang to Szechuan.
Heilungkiang-Mukden Line, It had been suggested in the "China Critic" that the long-pending issue of constructing from Heilungkiang to Tiehling or Kaiyuen appeared to have been shelved in favour of a line to Mukden.
Chekiang Railway, the construction of the Ningpo-Shaoshing section of the Chekiang railway was proceeding well. Trains to Shaoshing could be running as early as as summer 1913. However much of the money needed for the project had failed to materialize. It had been reported that a train was already running daily from Ningpo to Bah-Saw and further. Sze-hze, 30 miles from Ningpo would soon have twice daily trips, probably by Christmas.
Shanghai-Nanking Railway, report of the Traffic returns for the weeks ended November 23 & 30 and December 7. Also returns for 47 to 49 weeks of the current year.

South Manchuria Railway, The accounts department were preparing the fiscal report for the current year. 15 million Yen was needed for the SMR to fund undertakings of new industries. A coke factory at Chuencinchai was one such industry as well as harbour improvements at Dairen. The SMR return for November indicated inome of Y1,760,198 which was up on the previous year's figure. The 64 lb rails used by the Russians on what is now the SMR, have been replaced with 80 lb rails on the main line and further replacements were continuing on other sections.
Kirin-Changchun Railway, It had been reported that 10 carloads of tabacco leaves were arriving daily at Chnagchun on the new line and were then being transported to Mukden and Yingkou. Kirin timber was also being delivered. The revised train schedule for the line was Express leaves Changchun 7 a.m. Arrives Kirin 11.30 a.m. Ordinary train leaves 2 p.m. arrives K. at 8.15 p.m. The west-bound trains left Kirin at 6 a.m. and 2.40 p.m. arriving at Changchun at 11.10 and 7.20 resp.
Tcheng-tai Railway, the returns for this line from Shihchiachaung (on the Peking-Hankow line) to Tai-yuen-fu, the capital of Shansi, are recovering from the effects of the revolution. The line was commenced in 1904 and opened to traffic over its whole length of 151 miles in 1907.
Shantung Railway Company, The company would grant rebates of 20% to 40% on freight to compete with the Tientsin-Pukow railway.
Hukuang Railway, The Hunan section of the main line was again making progress with a team of British engineers leaving Tientsin to continue a survey near Chenchow, previously interrupted by the revolution. Shareholders had recently agreed that the railway needed foreign supervision.
Freight Cars, the Board of Communications had been notified that there were insufficient freight cars for traffic.

January 1913
Chinese Government Railways - A one-page advertisment for the Tientsin-Pukow Line Express passenger train Service. The advert notifies that the through express service had been inaugurated on 4th December 1912 twice weekly in each direction. The advert includes the timetable as well as fare tables and luggage allowances in catties. Two photos of Liu Huai Kuan and Peng-Pu railway stations.
Melchers & Co. A one-page advertisement for the engineering department of Melchers who were the agents for various German companies supplying locomotives and railway equipment to Government and private railways in China, including the Shantung and Tientsin-Pukow railways. One photograph of a 4-6-0 goods locomotive supplied to the Shantung railway.
Hannoversche Maschinenbau A-G, A half-page advertisement for the Hanover Locomotive Works and their China agents, H. Diederichsen & Co. One photograph of a 4-6-0 locomotive built for the Tientsin-Pukow Railway.
Henscel & Sohn. A half-page advertisment for this German (Cassell) locomotive builder and their China agents, Carlowitz & Co. of Shanghai. Two small photos of tank engines built for the Hanyang Iron and Steel Works and the Sunning Railway.
The Tientsin - Pukow Railway, a 11-page detailed historical and descriptive account about the building of this railway. The report commences with the political background to the line's construction and explains how the project came to be divided into two separate funded and supervised sections, the British Southern Section and the German Northern Section. Two sketch maps of the route and 28 photographs of personalities involved, construction sites, stations, trains.

Hwai River Bridge A report explaing how the Hwai River brdge for the Tientsin-Pukow line had been constructed. The three engineering officials in cahrge had been T.W.T Tuckey, T.J. Bourne and E. B. Naylor, 2 small photos of the bridge.

Railway Earnings in China It would be impossible to report accurate periodical returns of all railways in China but it was hoped that following reorganization by the Board of Communications this might be possible. The Peking-Mukden line's management were to be congratulated in respect of the previous year's earnings which totalledover $13 million, a record.

The Hukiang Lines This a 5-page report about the conclusions of talks between the Ministry of Communications and banks about loans for the the Hukiang Lines. The first section deal a survey for the Hupeh-Hunan trunk line which is the norther section of the Canton- Hankow line and to this end a 160 mile section between Wuchang and Yochow had been surveyed. The section would be difficult to build because of gorges and mountains crossed. From Yochow the line would head to Chuchow via Changsha. At Chuchow the line would connect with the Pingsiang colliery line. The next section of this report deals the Changsha-Chuchow section which a local company had already built although it was in very poor condition. The company was seeking to sell this at an exorbitance. The company had 2 Baldwin Mogul engines 2 Baldwin Double-enders and some German made rolling stock. The final section deals with the Szechuan-Hankow (Chua-Han) line. This projected line from Hankow to Chengtu via Ichang, Kweichowfu, Wanhsien and Chungking enjoyed the distinction of having triggered a revolution. Sheng Kung Pao's plans to nationalize the nations' railways provided the opportunity for the revolutionary organization to seize their opportunity and the agitation began in Szechuan where money had been subscribed locally for the construction of this line five years previously although not a sod had been turned in spite of the company having some 250 employees. The loan had been organized by Szechuan Viceroy Hsi Liang in 1904 to prevent a foreign loan and since then the money had been squandered. A number of Chinese engineers had been appointed but squabbles had broken amongst the shareholders over priorities and underfunding problems. 16 photographs of Szechuan railway scenes including Ichang station and other construction scenes. Some show the poor quality of engineering.

The Belgian Railway Loan. Full text of an agreement signed in September 1912 between the Chinese government and the Belgian Compagnie General de Chemins de Fer et deTramways en Chine in respect of a loan to fund the extension of the Kaifong-Honan line.

The Lotung Railway A short report describing the state of construction of the Hinanfu - Tungkuan railway extension to the Pienlo Railway. Locally funded little progress had been made and the government now intended to take over the line and build it with funds from the new Belgian loan. 3 small photos of the line in and around Honanfu (Luoyang).

The Pienlo Railway Short report describing this 115-mile long railway between Kaifeng and Honanfu, opned to traffic in 1908. Management in the hands of French officials , representing the Belgian loan syndicate.

The Shansi or Chengtai Railway 7-page report about the construction of the metre-gauge railway built 1904 -1907 between Chengtingfu and Taiyuanfu.. The French Engineer-in-Chief was M. Millorat. 17 photographs and large fold-out sketch map.

Kirin (Jilin) - Changchun Railway Report on the 79-mile long railway built for the Chinese government with Japanese funding provided through the South Manchuria Railway and completed in 1912. 12 small photos .

Far Eastern Railways Financial figures for periods in 1912 for the Tientsin-

Pukow (Northern section) and the Shanghai- Nanking Railways.
Tungyang-Mingkuo Railway A proposal had been made to build this line in Anhwei province.
Nanchang Pinghsiang Railway The provincial government was investingating a proposal to build this line funded by British capital.
The Ningpo Railway A report in the North China Daily News stated a short section of about 20 li of this railway had opened to traffic at Ningpo. A shortage of funds was preventing completion.
Canton-Huichow Railway. The Governor of Kwangtung Province was contemplating a loan of $10m. from America and another loan of $15m. from Great Britain to fund this proposed line.
Pukow-Sisyangchow Railway Shen Yun-pei, ex-Vice-Minister of communications, had been appointed Director-General of the Pukow-Sisyangchow Railway, and would consult with the Peking Syndicate about the flotation of the loan.
South Manchuria Railway A short report on the finances of this line and budget plans for developments in the following financial year.
Chinese Eastern Railway A short report about the traffic & receipts for the year 1911. The railway had been seriously affected by pneumonic plague and the revolution.
Pensihu (Benxihu) Railway. Funds had been raised for the construction of this railway to serve a coal mine and iron industries in Benxi, southern Manchuria .
The Aigun (Aihun) - Weichow Railway was being planned by the Heilongjiang governor.

February 1913
The Railways of Taiwan (Formosa) A two and half page report on the state of Tailwan's raliway eighteen years after Japan had seized control of the island. Descriptions of the Main, Taito and Arisan (Alishan) lines. 7 small photographs.
Far Eastern Railways
Shanghai-Nanking Railway - A table of figues showing traffic returns for January 1913.
The New Railway in Kwangtung. A short report about the constriction by Chinese engineers of a railway linking Kongmun (Jiangmen) and Pak Kai. This is a reference to the privately funded "Sunning" (Xinning Railway).
Hsuchowfu-Tsingkiangpu Line. A survey party of Chinese engineers had set out from Shanghai to investigate this proposed project in northern Kiangsu (Jiangsu)
Szechuan-Hankow Line. A shareholders meeting of this proposed line which would commence at Ichang (Yichang)
Earnings of Chinese Railways. A list of earnings for Chinese lines
The Lotung Railway. A report that the first section of the Lo-tung Railway from Lo-yang to Tieh-men had been completed and trains would commence
Yeungkong-Kongmoon Line. (Xinning Railway) Construction progress was delayed because of arguments over a river bridge at Kongmun (Jiangmen).
The Lung-Tsing >U-Hai Line. A report that Belgian Honanfu-Kaifengfu Railway Bonds were to be issued in Belgium on February 18. One million francs bargain-money was to be paid over to the Chinese Government simultaneously.
Manchuria
Hsinmintun - Fakumen (Xinmin- Faku) Light Line Ar eport that the Governor had authorized this line and a survey was underway.

Kirin-Hailungcheng Line A proposal had been made to build this line by the Kurin Industrial Guild.
South Manchuria Railway. A report that January 1913 had been a prosperous month for the SMR. Ttraffic receipts alone had averaged ¥87,748 per day.

March 1913
A Word on the Kailan coal-mines Two page report about the history & development of the KMA coalmines near Tangshan. 3 photographs including one showing visit to Tangshan by Sun Yat-sen on 24 September 1912.
Railway Boom on China Editorial about railway development within China.
The Locomotive Works of Henschel, & Sohn at Cassel. Report about locomotives being constructed for the Tienstin - Pukow Railway & other foreign destinations. 5 photos of locomotives (2 for China) .
Far Eastern Railways
Tientsin-Pukow Railway- Official Explanation by the German Authorities Connected with the Northern Section & Comparison of costs of the Northern and Southern Sections. A 3-page report with statistics.
The Hu-Kuang Lines - Revision of the Agreement 7-page report about how post revolutionary changes were being made to the financing of China's railways including nationalization of private lines. Photos of Direrctor Tsen Chun-Hsuan (CEN Yunxuan) & American Engineer, Frank Beckworth, appointed to the Hankow-Szechuan Railway . Also an report about a Proposed Nanchang-Pingsiang Railway .One map and also update on the South Manchuria Railway.
Personal . Hwang Kai-wen had been appointed Chief of the railway office of the Southern Section of the Kin-Han railway

April 1913
The Lung-Tsing-U-Hai Railway - Description of the Projected Line from Lanchow to the Sea. 5-page report with 11 photos, mainly of cultural and historical sites One picture of S. C. "Alfred" Sze (SHIH Zhaoji) the Director-General & new railway bridge across the Loho (洛河) .
Developing Pukow Article about the development of a railway terminus for Tiestin-Pukow Railway on the bank of the Yangtsze River opposite Nanking. 4 small photographs of railway scenes. 1 small photo of the late Dowager-Empress's funeral procession and catafalque entering Peking station.
China's Railway Receipts A report listing China's main line takings for 1912 compared with previous years.
Unifying Railway Accounts Short Report summarising Dr C. C Wang's recommendation to unify all railway accounts. 1 photo of the funeral rail car of the Empress Dowager and senior railway officials.
Imperial Taiwan Railways 1 photo of an ALCO 4-6-2 locomotive suppled to this railway.
Dr Sun Yat-sen's Railway Scheme A short report outlining how Sun had been authorized by President Yuan Shi-kai to plan China's main trunk lines. 1 photo of senior Chinese officials at Kin-Han railway station at Peking to inspect the Dowager-Empress's funeral carriage.
The Necessity for Unification of Railway Accounts in China The full report of Dr. C. C Wang's recommendation to unify all railway accounts. 3 pages, including photo of C. C Wang, Chairman of the Commission & small photo of funeral train of the Dowager-Empress leaving Peking.
The Funeral of the Late Empress Dowager Description of proceedings and 2 photos of funeral scene at Peking station.

Mr. A.W.U Pope, Engineer-on-Chief of Shanghai-Nanking Railway, had his contract renewed for one year.
Far Eastern Railways
Projected Railways in Northern Kiangsu A 2-page report on railway plans . One small map.
Financial takings for the Shanghai-Nanking Railway. Shorts reports on the Kowloon Canton Railway, Yunnan-Kweilin Railway, Lo-Tung Railway, plans for the Tanyang Ningkuo Railway (by Shanghai capitalists), Nationalization of the Kiangsu Railway. Tientsin - Pukow Railway , a dinner service was to be provided on the daily through train on the southern section.
South Manchuria Railway. Report on development and financial figures for March
Kirin-Changchun Railway. The Kirin- Changchun Railway had proposed to use coal mined from a colliery at Shihlingtzu. A light line for be laid to serve this.
Light Railway Between Mukden and Jehol. The proposed construction of the this railway has been approved.
Proposed Branch Line to Kuangning. The Govrenment had approved this branch line on the Peking-Mukden Railway
Tientsin-Pukow Line- Chinese Government Railways Advert with new timetable for through services.

May 1913
Unification of Railway Accounts Short report that Dr. C. C wang & Tsang Kuang-hsiang, Inspector-General of Railways had travelled to Europe to study various accounting schemes.
Far Eastern Railways
Projected Line in Kwangtung Report aboiut discussions to build a connection from the Canton-Kowloon Railway with Tsang Shing on the East River .
Kirin-Changchun Railway Report of traffic returns for the first three months of this year.
Proposed Changsan -Yusan Railway . Short report detailing this proposal by the Chekiang railway
Canton-Hankow Railway. A report that the Associate
Director of the Canton-Hankow and Hankow- Szechuan Railways, Dr. Jeme Tien-yew had arrived at Hankow early in May to arrange for the commencement of construction work. Engineering chiefs for the various sections are named.
Yencheng-Chowkiakow Branch Line. A proposal to build this branch on the Kin-Han Railway was being investigated.
Chinchowfu-Taonan-fu Railway. A Chinese engineer educated in USA had been appointed to survey this proposed line.
Short reports on the Shantung Railway (Dividend),
The Lotung Railway Mongolia and Tibet Communications Co had submitted a proposal to build a light railway from Kinchow to Taoman
Fang-chang Railway. A petition had been submitted to the Ministry of Communications for permission to build a railway from Chowkotien, of Fangsan, to Changkowo.
The Szechuan Railway. The Ministry of Communications have issued an order commissioning Mr. Feng Chu-pei to proceed to Ichang to arrange for the taking over of the Szechuan Railway.
Bridge Contract. The Shan-hai-kwan Bridge Works (belonging to the Peking-Mukden Railway) was recently given the contract for building the s superstructure of the bridge to cross the river at Tatung-fu, on the

extension of the Railway line from Kalgan.
Railway Officials. A report that when the Pienlo Railway was amalgamated with the Hailan Trunk Line, it was placed under the control of Mr. S. C. Sze, the Director-General of the Line. The Managing-Director of the Pienlo Railway has now been transferred to become the Director on the Kin-Hin Railway., It had been proposed that Mr Lu Hsueh-meng be appointed the Managing-Director of the Pienlo Railway.
The Chefoo - Weihsien Railway. The Surveying Corps had finished the surveying of the line from Chefoo to Weihsien, a distance of 200 miles. The estimate made by the Ministry of Communications of the cost of construction was T!s. 70,000 per mile, and the whole line would require about Tls. 15,000,000.
Shanhai-Nanking Railway Traffic Returns for April.
Manchuria . Update on the South Manchuria Railway and returns.
Penchihu-Kanchang Light Rail Line (Benxihu) The Fengtien Provincial government had approved this line.
Antung-Mukden Railway was also performing better than expected.
Lung-Tsing-U-Hai Railway. Full page sketch map and other railways north of the Yangtze River
Avertisements - supplement pages
Hurst, Nelson & Co. Ltd. Shanghai agent for Glasgow Rolling Stock Co.
Tientsin-Pukow Railway Full page advertisement , including 2 photographs,
Chinese Government Railways of North China Full page advertisement , including 3 photographs of Peking station and the 'Train de Luxe' operated by Wagon Lits company.
Berliner Maschinenbau, A.G Half page advert by this German locomotive manufacturing company with agents in Shanghai and Tientsin
Peking-Hankow Line Full page advertisement , including 1 photograph of the Chien men gate at Peking.
United States Steel Products. Full page advertisement by this company which had supplied railway bridges for Taiwan railways. 2 photographs of bridges.
Shanghai Nanking Railway Full page advertisement for this line. Small photographs of a train leaving a tunnel and several pagodas.
American Locomotive Company Full page advertisement by this company for steam locomotives, represented in China by Mitsui Bussan Kaisha.
South Manchuria Railway. Full page advertisement for this railway . 6 small photographs.
United States Steel Products. Second full page advertisement by this company for railway track and other associated equipment.
American Car & Foundry. Full page advertisement by this company for railway carriages and wagons. 23 small photos.
Chinese Government Railways - Tao-Ching Railway & Pienlo Railway
Full page advertisement with 2 photos.
Lima Locomotives Full page advertisement with 2 photos of locomotives, one a Shay type engine supplied for the Peking-Kalgan Railway
Chinese Government Railways - Kirin - Chang Chun Line Full page advertisement with 3 photos and current timetable.
Chinese Government Railways : Cheng-Tai Railway and Peking-Kalgan Railway Full page advertisement with 3 photos.
Tientsin-Pukow Railway Full page advertisement for Express Passenger Train Service, including 2 photographs of stations and timetable,
Arnold Karlberg & Co. Full page advert for railway equipment
Canton Kowloon Railway Full page advertisement with 8 small photos and 1913 Summer Season timetable for through trains.

Melchers & Co. Full page advertisement for locomotives supplied to Chinese railways . 1 photo of 4-6-0 Goods locomotive supploed to the Shantung Railway
United States Steel Products. Third full page advertisement by this company for railway track and other associated equipment
Carlowitz & Co Full page advertisement for railway equiomewnt and other machinery supplied for the China market.
H. Diederichsen & Co. Half page advertisement for Hanover locomotive Works. 1 photo.
Henschel & Sohn, Cassel Half page advertisement for locomotives. 1 photo
Avonside Engine Co. of Bristol Half page advertisement for locomotives. 1 photo

the Commonwealth would benefit, as the distance from Melbourne to Port Darwin by the Adelaide route would be 2,379 miles, against 2,463 by the Sydney route. This route would therefore probably be favoured by the Government of Victoria, but the difference in length is so trifling that the advocates of the line from Sydney feel convinced that its other advantages will secure its endorsement by the Victorians.

It may be of interest briefly to recapitulate the main arguments which have been advanced in support of the Sydney-Tobermory-Port Darwin route:—

The largest centre of population, Sydney, would naturally supply the largest number of citizen soldiers, and if connected with the far north by a direct route, in time of war would be able to render most assistance.

In time of war Sydney being the most important of the State capitals, may stand in the greatest danger of being attacked, and that at a time when large numbers of the Australian soldiers might be massed in the Northern Territory. The most direct route for the transport of troops would then be of the greatest value.

The direct route to Sydney would provide the settlers in the north with their best market.

Sydney being the most populous and wealthiest centre of Australia, if connected by a direct route, would furnish more capital and enterprise for the settlement of the north than any other centre of population in Australia.

Sydney being the greatest commercial city of Australia would naturally for that reason and from its geographical position, do most trade with Java, Singapore, China, Japan and other Eastern markets. Its direct connection by rail with Port Darwin, the last port of call for steamers in the north, would therefore be of great service.

If the through line goes from the principal centre of population and through the best country practicable, it would enable those who work it to provide the quickest and best train service, and the route that has the quickest and best train service will attract the most traffic, and be of the most service in the transport of mails to the north and east.

If the line were made from Sydney the distances by rail from the principal centres of population would be as follows:—

First, from Sydney via Bourke, etc., to Port Darwin would be 2,173 miles, as against 2,966 miles if the route is via Adelaide. Second, if the Sydney through route is adopted, Brisbane by rail to Port Darwin would be 2,005 miles, as against 3,691 miles if the Adelaide route is adopted. Third, if the Sydney route were adopted passengers by train from Rockhampton could reach Port Darwin by 1,950 miles travelling, as against 4,084 miles if they had to travel via the Adelaide route.

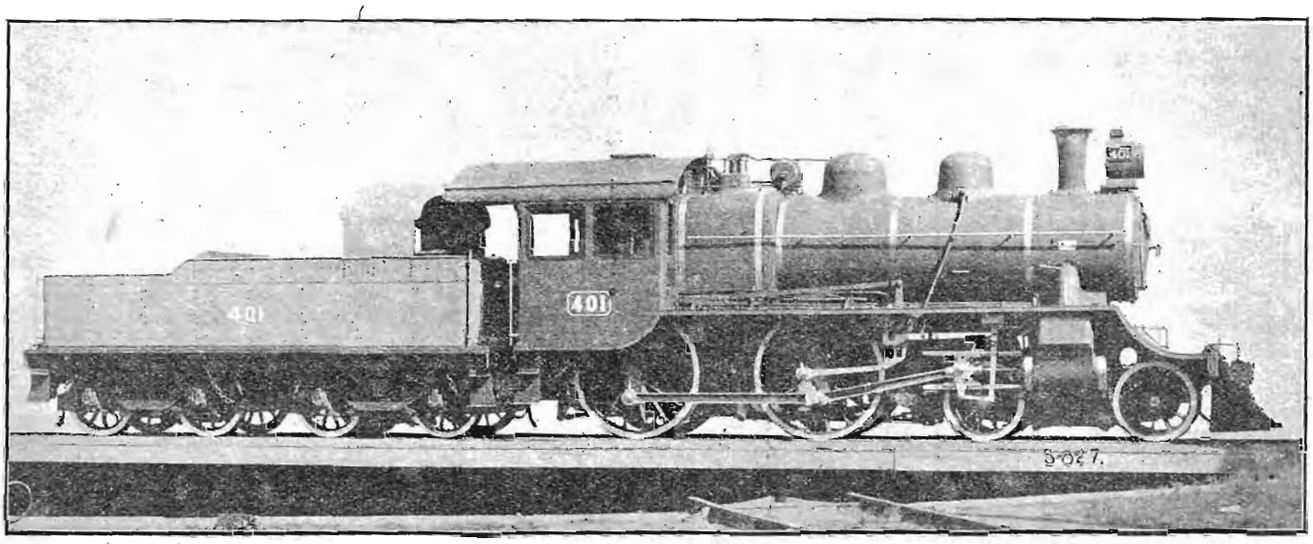
If the Sydney route were adopted it would best serve, taking the last census returns, the population of New South Wales and Queensland, numbering 2,252,547, as against the population of Victoria and South Australia, numbering 1,724,109.

If the route via Adelaide and Codnadatta were taken it would be for 1,067 miles (which has yet to be made) through mostly desert country with only in parts 4½ in. average rainfall per annum and consequently capable of very little production of traffic. If the Sydney-Bourke-Camooweal scheme were adopted it would be found that for nearly the whole distance the line would traverse excellent pastoral country, with in no case a rainfall as low as 4½ in.

If the Sydney route were adopted the Federal Government would only have to make about 640 miles of railway as against 1,067 miles if the Adelaide route were adopted.

The distances given are approximate, but are near enough for all practical purposes.

When General Chan Kwing Ming was a member of the Provincial Assembly under the old Government, he laid before the Assembly a proposal to build a railway from Canton City to Chiuchow, and Mr. Cheung Pat Sze, a well known millionaire, engaged a European engineer to make a survey of the line. As this was too big a task to be brought to a successful conclusion, as merchants were handicapped by the red-tape proceedings of the mandarins, the question was put off from time to time. As soon as Mr. Chan Kwing Ming came into power he caused the question to be revived. He put the matter in the hands of Mr. Chao Ching Hua, managing-director of the Canton-Kowloon Railway, and Mr. Shing King Hsun, managing-director of the branch line of the Canton-Hankow Railway to canvass for shares. It is proposed to float a company with a capital of twenty million dollars and the railway is to connect the Canton-Kowloon Railway at Shek-lung at one end, and the Chiuchow-Swatow Line at the other, passing through Waichow, Hoifung Jukfung and other districts at Chiuchow. It is believed that as soon as this line is completed the Canton-Kowloon Railway will become more of a paying concern.



Eight-wheel Express Passenger Locomotive recently built by the American Locomotive Co. for the Imperial Government Railways of Chosen. This locomotive is hauling a load of 245 tons, behind tender, over one per cent grades at speeds of 35 and 40 miles per hour Its principal dimensions are as follows:—Cyls. 18"× 26", Diam. of driving wheels 72". Heating Surface 1397 sq. ft., Grate area 25.2 sq. ft. Tractive Power 17,900 lbs. Weight on drivers 72,200 lbs., Factor of adhesion 4.03. Tender Capacity 3200 Imp. Gals. 300 cu. ft. coal.

CHINA

SUNNING-KONGMOON RAILWAY.—The extension of the Sunning Railway in Kwangtung Province, China, to Kongmoon has been completed.

The road is now 67½ miles long, from the river port of Kongmoon to the internal of one of the richest portions of the Pearl River delta. It has been constructed by Chinese without foreign assistance, much of the money for the railway being furnished by Chinese in the United States. Its equipment at present consists of 7 American and 5 German locomotives, 18 passenger coaches built in America, and about 70 box cars and about 70 flat cars of the usual American model, most of which have been constructed in the United States. The extension of the railway north from Kongmoon and eventually to Canton and south from Sunning City to the sea is to be undertaken as soon as affairs in this portion of China return to normal. The company owning and operating the line may be reached through Mr. Chin Kee Hee, president of the Sunning Railway Co., Hongkong or Sunning City.

CANTON-SWATOW; PROJECT.—Our Canton correspondent, writing on May 9 says the South China Post states that a project is on foot to construct a railway connecting Canton and Swatow.

CANTON-HANKOW RAILWAY.—Arrangements have been completed for the beginning of survey on the Wuchang-Yochow section of the Canton railway, and it is expected that the first survey party will be out early this week. Other parties will follow as soon as camp equipment arrives from Shanghai. It is expected that this part of the work will go through rapidly as there will be three parties out, each with six foreign engineers. In addition twenty native engineers will be engaged—five who passed the examination last year as assisted engineers, and fifteen others as student engineers.

SHANTUNG RAILWAY CO.—Berlin, May 1.—The Shantung Railway Company has declared a dividend of 6 per cent., preferential shares receiving a further dividend of 5 per cent.

CANTON-MACAO RAILWAY.

The destiny of the Canton-Macao Railway lies with a group of local Chinese, who are now advertising in native papers for capital with fair success. The route has already been surveyed and it is probable that construction work will be commenced at an early date. Starting at Fati, across the river from Canton, the line will run almost due south, through the districts of Shuntak and Heungshan, to the boundary

of the Portuguese colony of Macao. It will be about 70 miles long and will penetrate one of the richest districts of South China.

The country through which it passes is low lying, intersected by innumerable creeks and given over to rice, fruit, and vegetable culture. A 30-mile branch will connect the main line at Chentsun with the Sunning Railway at Kongmoon, via Kaukong.

Territory Served—Exports and Imports.—There are no very large cities on the railway, but there are innumerable villages and several towns of 10,000 to 50,000 people, among which may be mentioned Chentsun, Shuntak, Heungshan, Chingshan, Kamchuk, and Kaukong, the last two of which are ports of call for foreign steamers plying on the West River. The southern terminus of the main line will be within 5 miles of the new commercial port of Heungchow, now in process of construction, and will undoubtedly have some effect in hastening the completion of that pretentious scheme.

The people of the Shuntak and Henngshan districts are wideawake and progressive, and have come under the influence of a large number of Chinese returned from abroad. There are probably no richer districts agriculturally in China.

So dense, however, is the population that large quantities of rice have to be imported from abroad to help out the local crops. Sugar cane is grown on a considerable scale and turned into brown sugar for local consumption and export. Among the other manufactured articles exported from the districts touched by the railway are palmleaf fans, mats and matting bags, groundnut, cassia, and bean oil, samshu, coarse chinaware, paper, and firecrackers. Animals shipped alive for slaughter, poultry fresh and preserved, fresh fruit, dried and salted turnips and other vegetables, native medicines, and firewood may be said to complete the list of major exports.

The principal imports are kerosene, cotton and woollen piece goods, raw cotton and cotton yarn, matches, timber, metals, coal, saltpeter, foreign clothing and hats, shoes, umbrellas, sugar, dried and salted fish, flour, vermicelli, and macaroni.

Trade Expansion.—The natives of this section originally used, and to some extent still use, groundnut and other native oils for illuminants, but the steadily increasing sales of kerosene point to an early disappearance of the native article. The market for cotton piece goods is considerable, but apparently not growing. The people prefer native woven cloths for all uses to which they can be put, and the steady increase in the number of cotton mills in China, supplemented by innumerable hand looms, bids fair to make any expansion in the local market improbable. There is, however, a good market for foreign-made clothing, hats, caps, and other haberdashery, shoes, etc.

The taste for things foreign is not confined to clothing but extends to many articles of personal adornment and to condiments and provisions, including tinned fruits, vegetables and meat, wines and liquors, cigars and cigarettes, and condensed milk. A small cigar factory, using locally grown leaf, has recently been started in the territory served by the railway, a factory for putting up a local fish has been operated for some time in Macao, and several factories for tinning rice-birds, bamboo shoots, and lichees, carambolas, and other Chinese fruits have been erected within short distances of the line.

At the present time the only means of transportation and communication are boats on the innumerable creeks which intersect the delta, and wheelbarrows on the little paths which delimit the paddy-fields. Both of these will remain as valuable feeders to the railway, but they will pass out of existence as means of communication between intermediate points and termini. The district draws upon Canton, Macao, and Hongkong for its foreign goods, and the completion of the railway will bring all these places incomparably nearer to it. The new line will also afford the people a wider market for their fresh fruit, vegetables, eggs, and other perishable articles. (C. R.)

THE CANTON-AMOY RAILWAY.

The construction of a railway from Shekwan, across the East River from Shek Lung on the Canton-Kowloon Railway, to Amoy has been under consideration for a number of years, and in 1906 a survey of the route was made. The line is to be built by Chinese syndicates representing the people of the two Provinces through which it will pass—Kwangtung and Fukien. No advance has been made beyond the survey of the line, and it is probable that some years have still to elapse before construction work actually commences. The line will have a length of 275 miles in Kwangtung and about 100 miles in Fukien. It will penetrate a thickly populated country in a high state of cultivation, and will bring rail communication to several important cities now served only by inferior waterways.

The western terminus, Shekwan, is a busy town of some 10,000 people, drawing its importance from its situation at the apex of the East River delta, opposite Shek Lung, which has a population of about 20,000. It shares with Shek Lung in the distribnting trade of the delta and of a large area along both sides of the river to the east. The country about it is fertile and is devoted largely to the cultivation of rice, and bananas, lichees, and other fruit, and sugar and cattle and swine raising. From Shekwan the route follows a general easterly direction, through Waichow, to Louk Fong, and then striking north-by-east touches Kityang and Chaochowfu. From the latter place it takes at first a southeasterly and then a northeasterly direction to Wong Kong on the Fukien border. At Chaochowfu it crosses the Swatow-Chaochowfu Railway, giving it rail connection with the sea at that point.

A Populous District.—The first important city reached after leaving Shekwan is Pok Lo (with 100,000 inhabitants), whose trade has been overshadowed by that of Waichow which has a population of 300,000. At Waichow the East River turns abruptly to the north and runs for over a hundred miles through broad and fertile valleys, thickly settled and well cultivated. To this fact is largely due the importance of Waichow, which serves commercially both this valley and that south of the river. The principal products of this section are rice, fruit, swine, and poultry. Small craft feed the city's trade from the north, while boats drawing up to 3¼ feet can reach Waichow from the delta except during the season of low water. The completion of the railway will doubtless be followed at an early date by the opening of Waichow to foreign trade, as provided for in the British commercial treaty of 1902.

The line leaves the river at Waichow and runs to Hoi Fong through a hilly country interspersed with valleys and dotted with towns and villages. Of the latter only Ping Sang, Sam To Chou, Ko Tam, and Kung Ping need be mentioned. These are market towns, each serving its little valley or two and each with a population of about 10,000. Hoi Fong and Louk Fong are walled towns of 10,000 inhabitants each; both can be reached from the sea by small junks. All the way from Waichow to Louk Fong fruit, rice, and cattle are raised and small timber cut. At Louk Fong the line turns to the northeast and after passing Kwoi Tam, a walled market town of 10,000 people, and Pou Ning, a walled city of 100,000, reaches Kityang. This section is through more level country where cattle, pigs, poultry, and water buffaloes are raised; and rice, fruit, grain, and sugar grown.

Many Small Towns Along the Route.—Before Pou Ning is reached the country becomes thickly dotted with small villages and towns. It is a rich agricultural district. The city of Pou Ning lies on a tributary of the Swatow River and is accessible by small craft. Its importance is overshadowed by that of Kityang, however, which stands on the river itself and can be reached by boats drawing up to 10 feet. Kityang, with a population of 400,000, is a walled city upon which a large area to the north depends for its supplies, which this city in turn gets from Swatow.

From Kityang the line passes through a well-cultivated district to the prefectural city of Chaochow, population 500,000, situated on the Han River and connected with Swatow by a short railway constructed some years ago. Chaochowfu is an important collecting and distributing center for the Han Valley and considerable areas on both sides of it. Its foreign port is now Swatow, but with the completion of the line from Canton it will be able to draw easily upon Amoy as well as upon Hongkong and Canton itself.

There are no further important towns until Wong Kong is reached. This city with a population of 60,000, lies just within the provincial border and has a considerable trade in oranges and other fruit, indigo, vegetables, rice, sugar, cattle, and dried fish. It has water communication with the sea for craft drawing up to 1 foot only. The railway should find a market for its produce at Amoy, Chaochowfu, and Swatow.

What the Railway Means to Trade Interests.—It will have been observed that practically all the country through which the line from Canton to Amoy passes is agricultural, and so far without important manufactures; that, in other words, the purchasing power of the people is dependent upon the success with which they market the produce of the soil. The slow transport service offered in the past by native boats has made it impossible to go any distance from the fields to market and has seriously restricted the area of sale. It stands to reason that when Chaochowfu and other places along the line can ship their perishable fruit, vegetables, etc., to Canton, Hongkong, and Amoy by rail in a shorter space of time and more cheaply than they can now ship them a tenth of the distance by boat, only indifference on the part of the people themselves can prevent the inauguration of an era of increased prosperity.

It will have been observed, too, that the people who will be served by the railway, while able to feed themselves on fruit and vegetables, are dependent upon others for their clothing, many foreign articles of food, cotton and cotton yarn, illuminating oil, and coal (where it is used for fuel) besides many other articles known as sundries. These are now obtained from the open ports of Swatow and Canton or direct from Hongkong by junk at, in every case, a much greater expense than would be involved in importing them by rail. The people of this section have taken kindly to many foreign articles—some necessaries, some luxuries; and, given a greater purchasing power, there is every reason to expect an increase in the demand for foreign imports. (C. R.)

CHINESE RAILWAY PROJECT

At the instance of the consulate general in Hongkong, several American manufacturers of railway material have sent a representative to Mengtze and Yunnanfu (both cities in the Province of Yunnan), and two important locomotive companies also have men on the ground, in connection with the contract to construct the proposed line from Yunnanfu to Lanchowfu, on the Yangtze River, in the Province of Szechwan. The matter of freight rates, however, over the French railway from Haifong, in French Indo-China, to Yunnanfu, is of such controlling importance that the projectors of the line are seriously considering the construction of a line from Yunnanfu to Nanning (on the Yoo River in the Province of Quang Se), as a means of avoiding these excessive charges, as well as opening up the Province of Yunnan and west China by the new route. This road would give communication by rail and water with Hongkong and Canton.

This enterprise is not exactly an alternative of the construction of what is known as the Szechwan Railway, but it seems to be generally understood that the construction of the Railway to Nanning will postpone the construction of the line from Yunnanfu to the Yangtze. The survey work of the line to Nanning is now (November, 1911) being rapidly completed and the immediate construction of either the Szechwan Railway or the line to Nanning seems to depend entirely upon the early settlement of political disturbances in China generally. The detailed survey of the line from Yunnanfu to Lanchowfu, under the direction of two American engineers, is also rapidly nearing completion, the preliminary work already having been disposed of.

Trade Routes into Yunnan.—Hongkong importers who expected a revolution in the trade of Yunnan and Kwangsi Provinces in South China as a result of the operation of the railway from Haifong to Yunnanfu, have come to the conclusion that under present conditions much of the expected expansion will prove impossible. There has been a considerable increase in some lines of trade into and from these Provinces, but the increase has been due, to some extent at least, to generally improved conditions and mining and other internal development in the Provinces, and in spite of drawbacks due to railway conditions. The usual direct results of railway service have been minimized by interrupted service, troublesome customs and other charges, and particularly by high freight rates.

In spite of the opening of the railway, goods are still imported into Yunnan, Kweichow, and west China by rail through Burma, thence by pack train to Bhamo and on to Tengyueh, and then to Batang, about 400 miles north, or to Talifu, and even to Yunnanfu, whence the goods are distributed all over that part of the country, as they have been since the beginning of the trade. These costly means and tedious routes are used in spite of what would seem to be the manifest advantages of the rail route to Yunnanfu or to intermediate points and thence by the natural caravan routes to various points in the Province and west China.

The expected change in the direction of these imports has so far not been realized, and present indications are that the railway transportation charges over the line to Yunnanfu will have to be modified before any change can be reasonably expected. These charges bear with particular weight upon all great undertakings for the development of the country like railways, mining enterprises, factories, and, in short, all enterprises which require heavy machinery and a reasonable rate for the transportation of supplies or output.

Interrupted Railway Service—High Freight Rates.—The construction of the line into Yunnan has been too light for the nature of the country, the result being that the operation of the line has been interrupted between French territory and Yunnanfu for the greater portion of the time. Rainfall in some portions of the territory traversed is particularly heavy and the grades have been established largely by the use of a peculiarly light decomposed granite which has readily been swept away by floods. It has become evident that considerable work in reconstruction will have to be done before regular and uninterrupted service on the railway can be relied upon. This, of course, has had considerable effect in restricting the use of the railway and in retarding the development of the country.

The chief cause for the latter, however, is in railway rates. These rates are upon five classes of freight and are assessed upon the basis of five zones between the seaboard at Haifong and Yunnanfu. The rates are based upon considerations of comparative value and comparative bulk of goods as well as weight, and in general follow similar classifications in France. They vary from 11 to 26 cents local currency (4.73 cents to 11.18 cents gold at present exchange) per metric ton (2,240 pounds) per kilometer (0.62 mile) for the higher class of goods to 4 to 10 cents local currency (1.72 to 4.3 cents gold) per metric ton per kilometer for the lowest class of goods. To the present rates a surtax of 10 per cent is now added on the ground that exchange is low, but this surtax will be removed when the local dollar will equal 50 cents gold. On the basis of the rates fixed in the regular tariff the charges on the different sections for the several classes of goods amount to the following in gold dollars per metric ton:

Sections	Distance	Class 1	Class 2	Class 3	Class 4	Class 5
	Miles					
Haifong to Yenbay	104	$11.73	$9.60	$9.60	$5.33	$4.27
Yenbay to Lao-kai	87	7.28	5.92	4.58	3.64	2.73
Lao-kai to Mengtze	111	19.90	16.07	12.25	9.95	7.65
Mengtze to Annchou	27	2.40	1.95	1.48	1.20	.93
Annchou to Yunnanfu	152	13.65	11.02	8.40	6.82	5.25
	481	54.96	44.56	36.31	26.94	20.82
Surtax		5.50	4.45	3.63	2.69	2.08
Total		60.46	49.01	39.94	29.63	22.90

Extra Fees.—The rates on various classes of goods from Haifong to Yunnanfu, therefore, a haul of 481 miles, range from about $23 gold to over $60 gold per metric ton. To the rate of $23 to $60 per ton from Haifong to Yunnanfu, the railway company adds a charge of about $3 local currency, or $1.30 gold, as a "customs" charge, which seems to be designed to cover the clerical expenses of clearing goods through the Indo-China and the Chinese customs. The charge has, however, no actual connection with the customs duties, and is independent of the duties levied either in China, where 70 per cent of the usual Chinese customs duty is collected or in Indo-China, where 20 per cent of the full import duty on goods from abroad is collected as a transit tax on goods thus entering China. The freight rates above given are modified somewhat by rates for carload lots, but are increased for goods of a dangerous nature, considerable quantities of which are used in railway construction and mining enterprises.

In addition to freight on the long ocean haul from the United States to Haifong, the freight on rails from Haifong to where they are needed is about 150 per cent of the actual price of the rails in the United States.

Indo-China and South China Railways.—The project of Chinese governmental authorities and Chinese business men to connect the interior of Yunnan and Kwangsi Provinces with the seaboard by a railway from Yunnanfu to or near points more or less within the vicinity of Nanning, on the West River, as an alternative route to the route now had by rail through Indo-China and over the French railway into Yunnan, is likely to be hastened by plans of French railway interests in connection with trade now handled through the Chinese port of Lungchow and thence down the West River. According to the annual report of the acting commissioner of customs at Lungchow, Mr. P. C. Hansson, just published, "French aspirations to extend their Hanoi-Langson Railway to Lungchow and Nanning would appear to have been definitely abandoned." The commissioner continues:

The line is, instead, to be pushed through French territory to Nasham, the uppermost navigable point on the Sungki River, which flows down past Lungchow. Farther down the river is a place called Binhdao by the French, Pingtu by the Chinese. Between this and Nasham the river makes a large bend, forming a sharp angle, with its top near Thatke; and it is urged in the Tongking newspapers that by extending the railway the few miles across from Nasham to Binhdao a saving in time of forwarding goods corresponding to the time it takes the junks to navigate the tortuous bend —at least four days on the upward journey and two days downstream—will be effected; also that Binhdao will then become the "real port" of Lungchow. The pushing of the Hanoi-Langson Railway to a point on the Sungki River reachable by junks was advocated as far back as 1889 by Mr. Commissioner Carl as a means of capturing the trade flowing down the West River from these parts, Poseh, and Nanning. Since then, however, great improvements have been effected in the West River route, a number of likin barriers have been removed, Wuchow and Nanning have been opened to trade, and a flotilla of motor boats now complete for the growing traffic above Wuchow. In oder to deflect part of this trade via Tongking, shallow-draft motor boats would have to run in connection with the railway, and cheap freights and the most liberal transit facilities by the Tongking authorities would be a sine qua non. Whether all this will be done remains to be seen.

Fertile Land Awaiting Cultivation.—The present trade involved in the development of either of these routes is almost altogether with or rather through Hongkong, but it is not large, and there is little hope of any material increase in it until there has been that development of the country by improved means of transportation these various plans promise. It is a fact of much significance in Chinese affairs that there are great tracts of land of fertility and promise in Kwangsi and Yunnan which are not peopled or cultivated. The commissioner says of this phase of the situation:

The country is very sparsely populated, large tracts of land lying idle; a steady flow of settlers would be wanted to remedy this. To induce emigrants from Kwangtung to come here, rather than allowing them to depart for foreign countries, should be a task of national importance to China. First of all, however, improved means of communication within the Province would be necessary.

The completion of the French route to the river at Nasham or of the Chinese route to the river at Nanning or Poseh will open up a territory which is now practically valueless. The experience of the railway to Yunnanfu has, however, been that unless the railway rates are low the full effect of its construction and operation cannot be realized.

In the meanwhile and until the breaking out of the revolution in China motor-boat service on the rivers west and northwest of Nanning to Poseh was maintained and increased considerably. It will doubtless continue to be the most approved means of reaching this territory until railway service is finally realized.

Kirin-Changchun Railway.—Viscount Uchida's reply to the interpellation of Mr. Shiro Shiba, in the House of Representatives March 7th, 1912.

"What is the policy in relation to the Kirin-Changchun and Kirin-Hoiryong lines of railway in South Manchuria?"

"The Kirin-Changchun line was to be constructed by China, and a connection made with the Japanese line. The construction was suspended by the outbreak of pest. An able manager of the undertaking had been difficult to find, while the Chinese officials and specialists engaged under a poorly qualified manager showed little skill and experience in the work. These defects were common to other railway lines undertaken by Chinese and not special to this line. Besides, the provisions for the position and power of the Japanese experts were defective, and this fact hindered their full activity. The line was an expensive one, having already absorbed 3,000,000 yen; but more than half its length had been completed, and only 33 miles were left incomplete.

In reference to the Kirin-Hoiryong line, the time for commencing its construction was to be fixed by the Chinese Government, after consulting with the Japanese authorities. A delay caused the Japanese Consul at Mukden to make inquiries and carry on negotiations with the Viceroy of Mukden. But the outbreak of the present disturbance put a sudden end to the affair."

Mukden.—With reference to the agreement made last fall between the Japanese and Chinese authorities here for the extension of the track of the Imperial Railways of North

(*Continued on page 31*)

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THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance Commerce

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ETC.,

HON. DEAN C. WORCESTER
Secretary of the Interior Department of the Philippine Government

The Foremost Authority on the Resources of the Philippine Islands. Author of the Highly Instructive Report on Coconut Growing, Appearing in this Number

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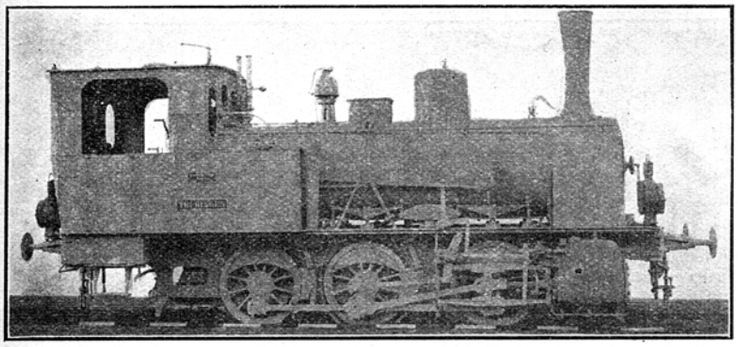

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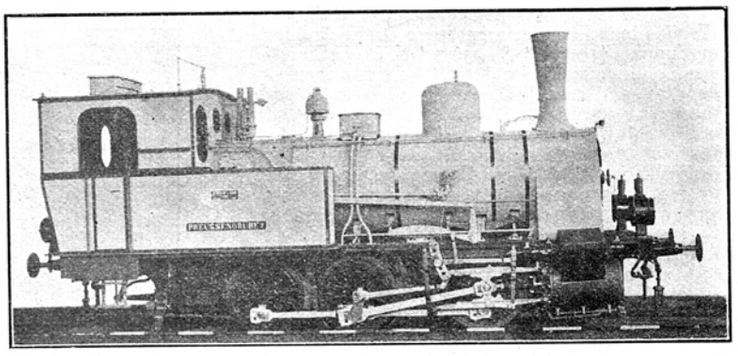

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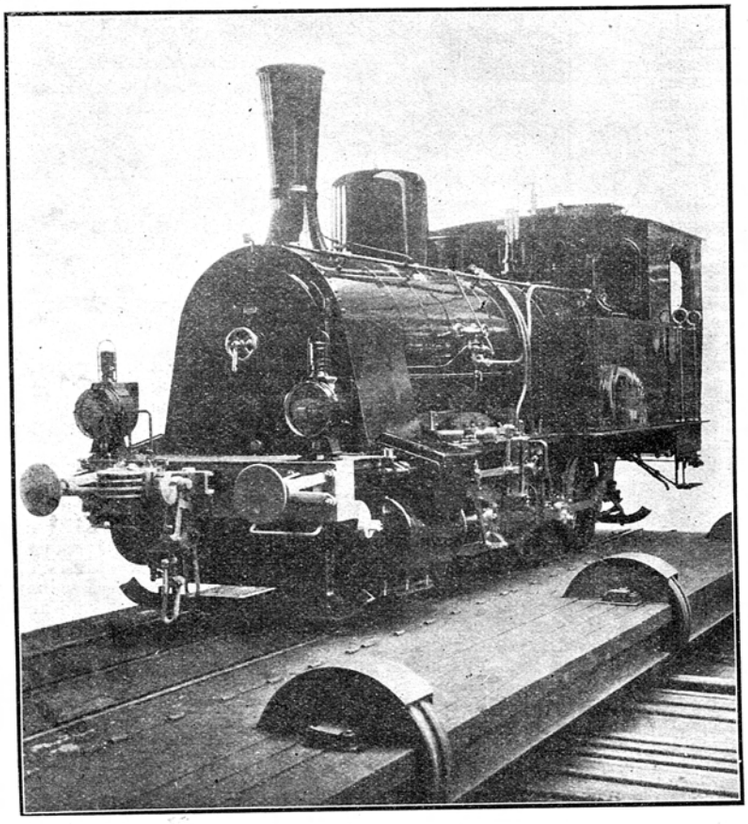

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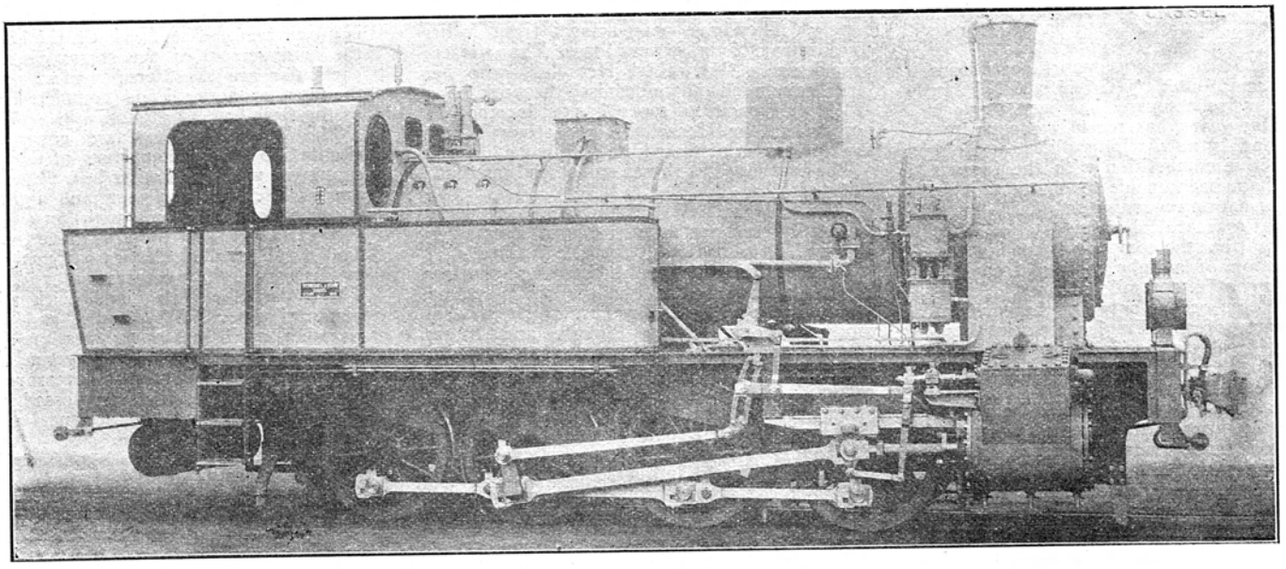

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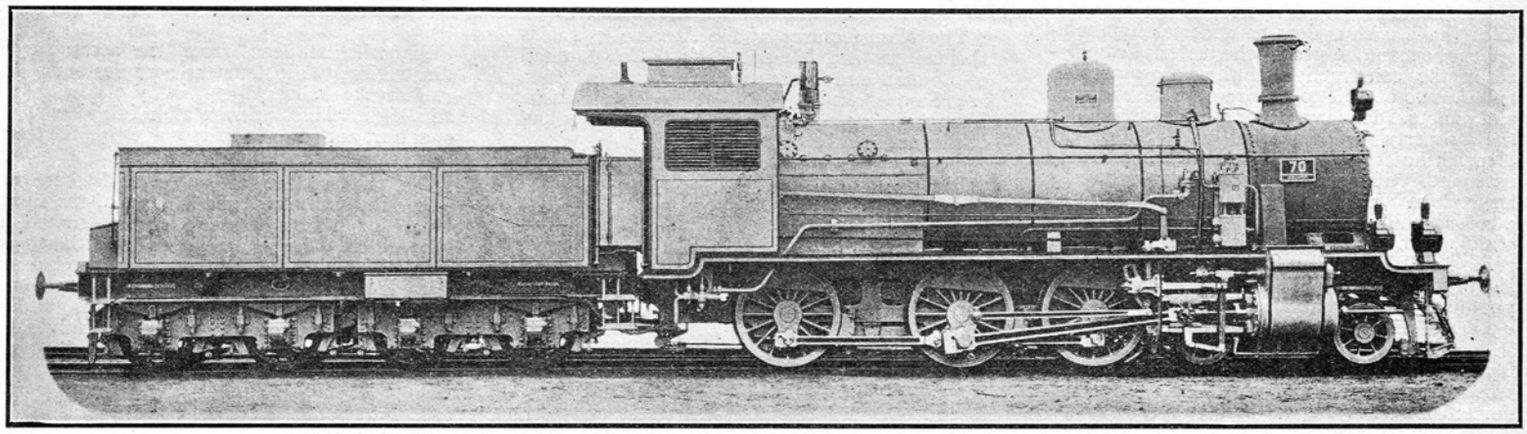
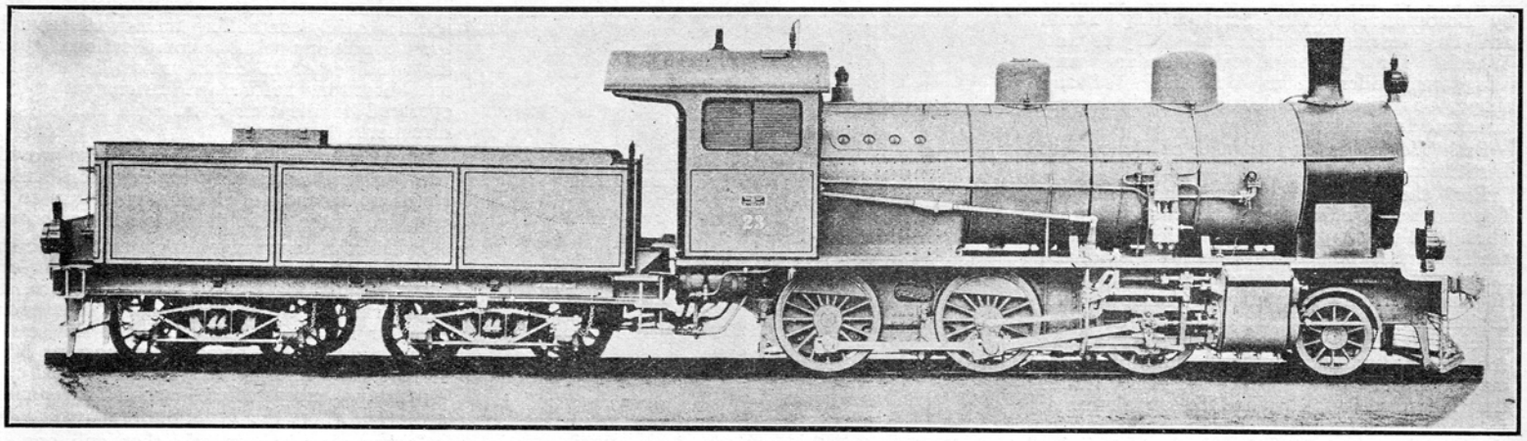


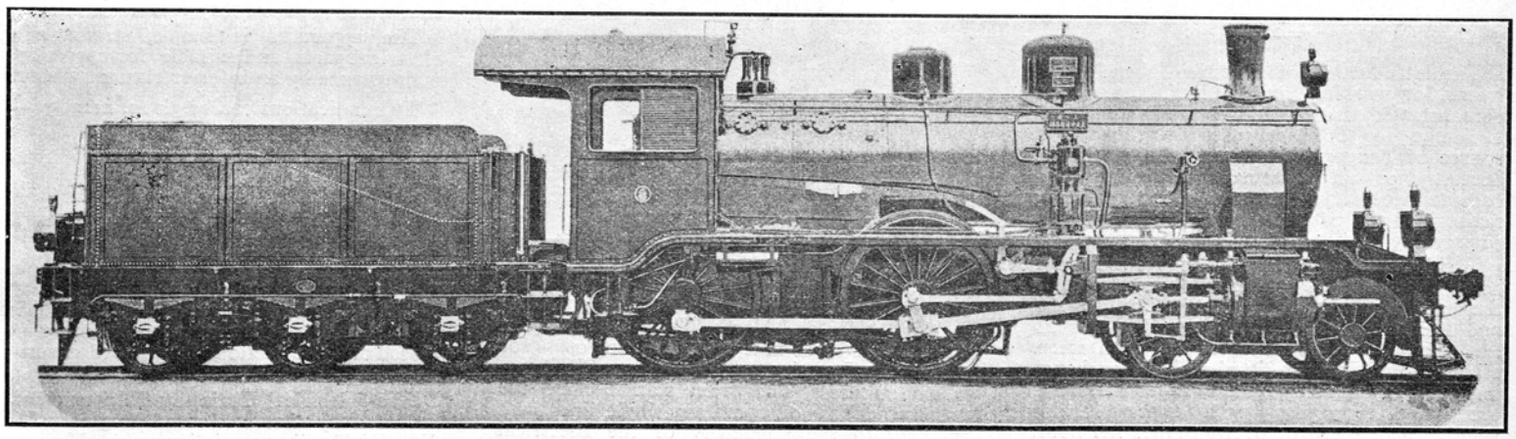
4–6–0 GOODS LOCOMOTIVES FOR THE SHANTUNG RAILWAY (CHINA)

Gauge	8½"
Diameter of cylinders	19¾"
Stroke of pistons	24¾"
Driving wheels diameter	53⅛"
Rigid wheel base	12′ 5⅝"
Total wheel base	23′ 5½"
Working pressure	170 lbs/sq. in.
Grate area	26,5 sq. ft.
Firebox heating surface	141,5 sq. ft.
Boiler Tubes heating surface	1,565,0 „ „
Total heating surface	1,706,5 „ „
Weight empty	110,200 lbs.
Weight in working order	123,000 „
Weight on driving wheels	92,700 „
Tractive force maximum	23,200 „
Tender:	
Diameter of wheels	93⅜"
Total wheel base	15′ 5"
Water capacity	3,520 gal.
Coal capacity	8,800 lbs.
Weight empty	49,600 „
Weight in working order	93,600 „



2–6–0 GOODS LOCOMOTIVE FOR THE TIENTSIN-PUKOW RAILWAY

Gauge	4′ 8½"
Diameter of cylinders	19¾"
Stroke of pistons	24¾"
Driving wheels diameter	53⅛"
Working pressure	185 lbs/sq. in.
Rigid wheel base	13′ 1½"
Total wheel base	20′ 8"
Grate orea	28 sq. ft.
Firebox heating surface	146 sq. ft.
Boiler tubes heating surface	1,740 „ „
Total heating surface	1,886 „ „
Weight empty	116,000 lbs.
Weight in working order	132,800 „
Weight on driving wheels	105,900 „
Tractive force maximum	25,150 „
Tender:	
Diameter of wheels	39⅜"
Total wheel base	17′ ¾"
Water capacity	4,400 gal.
Coal capacity	14,300 lbs.
Weight empty	43,905 „
Weight in working order	102,100 „



4–4–0 PASSENGER-LOCOMOTIVE FOR THE CHEKIANG RAILWAY (CHINA)

Gauge	4′ 8½"
Diameter of cylinders	18⅛"
Stroke of pistons	23⅝"
Driving wheels diameter	69"
Rigid wheel base	8′ 6⅜"
Total wheel base	24′ 3⅜"
Working pressure	170 lbs/sq. in.
Grate area	24,7 sq. ft.
Firebox heating surface	109,5 sq. ft.
Boiler tubes heating surface	1,150,0 „ „
Total heating surface	1,259,5 „ „
Weight empty	103,000 lbs.
Weight in working order	113,500 „
Weight on driving wheels	70,600 „
Tractive force maximum	14,400 „
Tender:	
Diameter of wheels	39⅜"
Total wheel base	10′ 10"
Water capacity	2,640 gal.
Coal capacity	11,000 lbs.
Weight empty	35,700 „
Weight in working order	73,200 „

THE FAR EASTERN REVIEW

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GEO. BRONSON REA, M.E.

PUBLISHER AND EDITOR

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SUN YAT SEN'S RAILWAY DREAM.

The remarkable vicissitudes of railway enterprise in China bid fair to be added to by the activities of Dr. Sun Yat Sen, the ex-President of the Republic. From the exalted pedestal of politics Dr. Sun has ostensibly stepped down into the arena of humble yet potent industrialism, and, making up his mind to bend his talents towards the material rather than the political betterment of his country, has decided to promote railway construction throughout the length and breadth of the land as the best means of profitably absorbing his effervescing energies. Rightly enough Dr. Sun sees more promise of national advancement through the agency of the iron horse than by means of the much vaunted instrument of political reform. That, of course, has been urged upon Chinese statesmen and officials for generations past by the best of China's foreign friends, but never have the Chinese been able to grasp in its full significance what systematised railway communication actually means to a virile country and people. Dr. Sun Yat Sen seems to do so. He has, however, had the distinct advantage of the experience of travel in many parts of the world, and particularly in America has he been privileged to learn what a tremendous force for industrial and general development the railway is. He has observed the rapid returns from pioneering enterprises in the wide expanses of the States, and he rightly dreams of similar successes in China. They should in reality be greater. He has seen and appreciated the enormous benefits accruing and derivable from rapid track laying in those districts where there is a demand for speedy communication and rapid transport, and he reasons that what has been done in America to open up the wildernesses and make them blossom can be done in China to a much more profitable degree in those vast, thickly populated and intensely cultivated provinces now being served by nothing more satisfactory than a river, a canal, or, as is the case in the major part of the interior, by deep-rutted roads or narrow paths passable in the best of conditions only by virtue of the utmost patience and the expenditure of unlimited time.

Dr. Sun is a convert to the rapidly laid track, and he seems to see in it the panacea for most of China's ills. Taking the cue from other lands he is arguing with his fellow-men that wealth not only comes from the soil but from the deeps below the soil, and he is urging them to understand that the development of mining, the establishment of factories and manufacturing concerns constitute the natural corollary of railway expansion. He, with impetuosity that is laudable, wants railways to be spread about the land as fast as they can be built. He realises, too, in addition to the sordid benefits accruing, that the death-dealing famines can be stayed in their wrack and ruin of human life and national vigour by an adequate system, and that system, he declares, he is bent upon introducing.

It is at present the idea of Dr. Sun Yat Sen that great trunk lines and provincial and inter-provincial systems, can be, and should be, built without Governmental interference. He aims at private control, or, at most, provincial control, and is developing a plan (which we hope to be able to present to readers and discuss at a later period) whereby private capital shall be employed to construct the lines with freedom from vital interference from Peking or elsewhere. From the provinces, therefore he must seek the franchises and from the Central Government the acquiescence and support with which to attract the capital; and once he has the inducements at his disposal it is his intention to invite foreign capitalists to consider the feasibility of the scheme he will then have to propound. The opposition which has been shown in the past to inter-provincial railway enterprises having emanated from the provinces Dr. Sun is determined to risk no such disastrous obstruction in the future, and his energies are being devoted as a preliminary to the guidance of the provincial mind to that point where antagonism and agitation will be stayed sufficiently long to enable the knowledge to insinuate itself that the country will eventually get something of vast and increasing value for virtually nothing. That is the bait which Dr. Sun will hold out to the provinces to secure their compliance. He will endeavour to make terms with capitalists to build and work the roads to their own profit, and, within a given period, to hand them over to China as going concerns, free of cost or encumbrance. And he hopes to succeed. He knows that the Chinese cannot find the capital to finance anything like the system he has in mind, and he has lived to realise that they cannot secure value for their money, even if they have an abundance of it to dispose of, when they try their own prentice hand on railway work. The salvation is in the aid of the foreign capitalist and railroad engineer, and though it will not be put to the provinces in so many bald words, that is what is meant. The critics and the agitators among the provincials will be silenced by the fact that after a given time they will acquire railways without having had to pay for them. At least, that is considered by Dr. Sun as sufficient inducement to secure their consent, if not their active co-operation, in pushing a utopian scheme through to the utmost limit of success.

The ex-President does not intend to satisfy himself with any half-baked or diminutive plan. He sees in his mind's eye a net-work of rails covering the great expanses of his country—the provinces interlaced, and the far-flung frontiers of

the west in touch with the sea-board on the east. Trunk lines will stretch from Shanghai to Canton and away out with the setting sun through Yunnan to Lhassa and curl round the extreme edges of the Lid of the World into Sinkiang; from Shanghai direct through the heart of the rich provinces of the Yangtze valley, branching off north-west through Szechuan to Tibet to link with the line from Canton at Lhassa and direct north to open the wealthy productive areas in distant Sinkiang, and there connect with the line coming from Tibet along the Western frontier limits; from Tientsin north-westwards to Mongolia to link up in Sinkiang with the trunk lines sweeping from Shanghai; from Tientsin north-eastwards through Manchuria and also through the eastern part of Mongolia. These are roughly the main lines Dr. Sun projects in addition to the trunk system now being laid down in the provinces. But Dr. Sun dreams of still greater conquests. He sees each province a model of internal communication, and aims at developing a connected system such as no country in the world possesses. To-day it is a dream; to-morrow Dr. Sun hopes to see it all a living reality. He has so far secured the consent of Kwangtung, Kwangsi, Yunnan and Kweichow provinces to operations in the southern section of the country, and he is now preparing to overcome any objections in the Central and Northern provinces. When he elaborates his plans he proposes to visit Peking to place the whole project before the President, the Cabinet and the Advisory Council, and if he can persuade the different factions congregating in the capital to sink their provincial differences in this great matter he will have accomplished what no other man has so far succeeded in even commencing, and his life will not have been lived in vain, even if he fails to drive one spike in the lines he has drawn upon his map as desirable and possible. But whatever the ultimate result of Dr. Sun's dream, certain it is that his efforts will awaken an immediate and wider interest in railway projects in the land, and it is quite possible that if the fever for communication sets in the many feasible and potentially profitable projects which have for so long been hung up in the atmosphere of doubt and disappointment will within reasonable time be revived and carried into effect. Without even thinking of touching the sparsely populated and mountainous regions of Tibet, the wide uninhabited areas of Sinkiang, and the barren deserts of Mongolia, there is a life's work in the Central provinces alone, and if Dr. Sun can succeed in accomplishing a tithe of what lays there to his hand he will have conferred an inestimable blessing upon his country and will have contrived a monument to himself of a more substantial and enduring character than he could possibly ever have expected to have come to him as a result of efforts in the political phases of his country's activities.

PHILIPPINE SUGAR

One of the most valuable official publications of the Philippine Government is the "Handbook on The Sugar Industry of the Philippine Islands" recently issued under the direction of the Bureau of Agriculture. This comprehensive treatise on the most important industry in the Islands, is of the greatest value and assistance in arriving at a fair knowledge of the conditions surrounding the cultivation and manufacture of sugar under the primitive methods still in vogue, and in furnishing the agricultural data necessary for basing estimates of production and manufacture under more up to date methods. The lack of accurate data based on intelligent observation was a great handicap to the government and those friends of the Islands, instrumental in aiding the passage of the Payne Bill through Congress, and gave strength to the arguments of the opposition whereby the measure was defeated for several years. The information now published in the Handbook, especially the report of Mr. Herbert Walker, on the "Sugar Industry in Negros," should have been compiled and issued ten years ago, as it was clear to all who had the best interests of the Islands at heart, that the only way to refute the arguments of the opposition, was to have a thorough official report on the Sugar Industry, from a responsible and competent sugar chemist, specially assigned to the work.

There is little doubt that sugar is the premier crop of the Islands, whose future prosperity will be determined largely by the successful exploitation of this particular industry. And yet while money was freely expended by the Bureau of Agriculture, in experimenting with all other crops, and a great amount of valuable literature published, the sugar industry was passed over and neglected until 1909. In a foreword to the Handbook, the Director of Agriculture, Dr. G. E. Nesom, says "the Bureau of Agriculture has had charge of La Granja Modelo, the old Spanish sugar experiment station in Negros, since 1903, but has been without adequate means or equipment to carry on satisfactory lines of field or mill work." While the political future of the Islands remains uncertain, and tariff questions relating to Philippine products imported into the United States continue a subject for debate, the local Government here cannot actively encourage the development of the sugar industry along the lines it most deserves." This bears the date of July 1911, two years after the passage of the Payne Bill, permitting the free entrance of 300,000 tons of Philippine sugar into the American market.

Are we to infer from this statement that the Insular Government, owing to the uncertain political future of the Islands, does not intend to further interest itself in the development of the Sugar Industry now that the Payne Bill is a reality? Such a statement would suggest that the Philippine government cannot promote the welfare of those under its charge, and is tantamount to a charge of subordinating the welfare of the Filipinos to the mandates of the beet sugar trust in America. The reasons given as to why the local government can not actively encourage the development of the sugar industry, can not be accepted, as it would constitute an indictment of the administration policy in the Islands. We can see no good reason, why the Philippine government should not do all in its power to encourage the one manufacturing industry that will bring the greatest prosperity to those under its charge, and our candid opinion is that Dr. Nesom's "Foreword" simply lacked careful editing. The publication of the Handbook in itself refutes the statement so carelessly made in its Foreword, so the reading investor may take heart and pass over to those pages which contain information of the greatest value. A short historical sketch of the Sugar Industry in the Philippines from the pen of Mr. Harold M. Pitt, makes interesting reading, and the chapter on "The Modern Cane Sugar Industry" is of great value to the native planter who desires to secure a fair working knowledge of modern sugar making and cultivation of his fields.

By far the most interesting and instructive portion of the book is that devoted to the "Sugar Industry in the Island of Negros." It is of particular interest, as it is the only treatise dealing entirely with sugar, which has been published since the American occupation, as the result of investigations by a competent authority. The necessity of this work as already stated had been emphasized time and again, and in 1908 the government detailed Mr. Herbert S. Walker of the Bureau of Science to this duty. Mr. Walker was stationed in Negros during the entire sugar campaign of 1908 and 1909. Equipped with a portable chemical laboratory he visited the various haciendas, and secured at first hand a wealth of valuable data on the soils, cane analysis, mill and sugar house control, and other important information which will serve for some years as a guide to the industry of the Islands. With the erection of the new central factories operated under expert chemical control, further valuable data will be forthcoming, to supplement the highly valuable work of Mr. Walker.

Mr. Walker's careful studies reveal the fact that Negros cane is the best in the world, giving the high average of 16.06 per cent in sucrose with an average low fiber content of 10.02 per cent. In Hawaii with the most careful cultivation, irrigation, selection of seed, etc, the best canes grown during the campaign of 1909, showed only 16.01 per cent of sucrose, and these had been in the ground twenty months before cutting. The fiber in the Hawaiian cane is given at 12.5 per cent on an average, with a maximum of 15 and minimum of 10 per cent. In Egypt the average sugar content of the canes is given at 14 per

Ld., London, has placed an order with the Taikoo Dockyard Engineering Co., of Hongkong, for the building of the largest motor vessel which, so far, has been built outside of Europe, and Messrs. Olderup and Schluter, the representatives for the East of Messrs. J. and C. G. Bolinders, will supply the motor machinery. The principal dimensions are as follow :—Length, overall, 218 ft.; beam extreme, 32 ft.; and depth moulded, 9 ft. 6 in.

N.Y.K. fleet.—The Nippon Yusen Kaisha has recently bought two foreign steamers. One or these is a steel spar-deck steamer, the Hillcrag (late Bannockburn), 4,036 tons gross, built at Glasgow in 1908 by Messrs. Russell & Co. This vessel was beached near Dover in March, 1911, after a collision in the English Channel, and after having being refloated and repaired, was sold for about Y. 42,000 in September last to the Jetsam Shipping Co., of London, which has now sold her to the Japanese Company for about Y. 54,000. The other vessel is a steel 'tween-deck steamer, now being built by Messrs. Russell and Co., at Glasgow, to carry about 8,300 tons deadweight, and which has now changed ownership.

MINING

PHILIPPINE ISLANDS

Guamas Dredge Launched.—On July 1st the big dredge on the Guamas river was launched. The dredge is being installed by the New York Engineering Co. for the Philippine Exploration Co. which controls the property one the richest placer grounds in Paracale, situated on the Guamas river. The work of installation comprised the building of a railway from the coast to the side of the new dredge, the construction of a dam near tide water, another below the pit where the dredge was launched and another above as a sort of retaining wall. The dredge is 120 feet in length 40 foot beam and depth eight feet. Over 300,000 feet of timber was used in its construction. It was expected that the dredge would be in active operation within two months of the launch.

Bataan Coal Mine.—A new Company is to be organized to take over the affairs of the East Bataan coal mining company and to operate the mine for the benefit of the stockholders of the old company and the creditors of the organization. The new company has not as yet been organized, but all plans have been made for its formation. It is probable that Mr. Nolting will be the president of the new company, and that Colonel Harbord acting chief of the constabulary and A. T. Gillespie the broker will be on the board of directors. C. N. Orr the present manager of the mine will continue in his present capacity, he being a mining man of many years' experience in the United States. The present equipment with the apparatus and the mine is expected to be turning out 300 tons a day at the end of three months after starting. The capital of the new company is to be P50,000 for which bonds are to be issued.

Electrical Dredge.—A new electrically driven dredge has been purchased from Hongkong by H. E. Nelson for installation on the Mariquina River. It has a capacity of 1,000 cubic meters in 10 hours, lifting gravel from a depth of 24 feet at an angle of 45 degrees. The power will be supplied by the Manila Electric Railroad.

Hydraulic Gold Mining.—The Luzon Gold Company, which holds properties in Tayabas, Neuva Ecija, Rizal and on the headwaters of the tributaries of the Umirai River and Angelo River has introduced the hydraulic process. The plant now in operation consists of 300 yards of ditch flume and 60 yards of flume, delivering water to a penstock from which is taken a double line of hose carried across the river by a suspension bridge. One hose is used as a bank head and the other a nozzle head. Further plants are to be installed.

Junction Mining Co.—A company bearing this name has been formed in Manila to carry on mining operations in Surigao district, Mindanao. The company has been incorporated for P200,000. The prospects are said to be most favourable.

Umeari Gold, Limited.—A New South Wales corporation organized to operate on the Umeari river, northern Luzon, has been given a license to do business in the islands. Wolfson and Wolfson are attorneys for the company.

CHINA

Tayeh Silver Mines.—Rich supplies-of-ore are accessible at the Government silver mines at Lungkoshan. Workings have been started in six different places and plans are being devised for smelting furnaces to be erected in the vicinity, and a railway is to be made either to the river or to Wuchang.

Coal near Changchun.—A Chinese discovered recently a coal mine at a village called Huashihling situated at the south of Changchun. He is desirous of working the mine on share capital, and is reported to have sent some agents to Shanghai for the purchase of machinery, etc.

Siberian Tin.—German capitalists with the co-operation of the St. Petersburg International Bank have formed a company to exploit tin mines in the Transbaikal-Nerchinsk district, three and a half miles from the station of Olovyanka on the Transbaikal Railway.

Saghalien Coal.—The Duisky Coal mines in Saghalien are said to be the best in the whole Pacific region, both in quality of coal, and wealth of deposits. The coal yields 71.01 per cent of coke and its heat productivity is given as 7,735.27 calories. It may compare with the best varieties of English or Scotch coal, being suitable not only as a steam raiser, but also for the coke it will yield for use in blast furnaces and for other metallurgical purposes.

Coke in Japan.—Owing to the limited supply of coke available from English and Germany the Japanese have established several special coke manufactories. Experiments have shown that the best coke is that produced from Kaiping coal dust. It costs about Y 13 a ton, while German coke cost Y 26 and English Y 24 a ton. The Kaiping coal dust is taken by rail from Tangshan to Chingwantao. The coal store at Chingwantao is connected with the wharf by two lines of railway, and steamers are enabled to take a load of 3,000 tons in twelve hours. About 541,810 tons are imported into Japan annually.

RAILWAYS

Kaiyuan-Taolu Light Railway.—As the outcome of a heated debate at the Fengtien Provisional Assembly the scheme for building a light rail line between Kaiyuan and Taolu was adopted in preference to the other plan of choosing Tiehling for the western terminus of the line. It was passed by a large majority that this light railway line should be extended further westward to Tungkiangkou, the river port on the Liao. The question of constructing another line between Taolu and Tiehling was left optional and permissible.

Military Lines in Kwangtung.—The Tutuh of Canton, Hu, has decided to construct military railways to connect the provincial Capital with the surrounding districts to the east, west and north. Lo Yi-chun has been appointed the chief surveyor to survey the lines.

Tientsin-Pukow Railway.—Its Southern and Northern Sections being connected, the Tientsin-Pukow Railway was opened to through traffic on the 21st ult. The time now required to go from Shanghai to Tientsin or vice versa is three days, but an express will run in the Autumn when the trip will take one day and a half.

Kirin-Chanchung Line.—It is estimated that nearly three million taels are necessary before this line can be brought into working order.

S.M.R. Co.,—The South Manchurian Railway Co. management has issued to its shareholders a circular notice calling them to pay in the third instalment of Yen 40 per share of Yen 200 by October 1st next. This, coming, as it does in the track of the second instalment called up on June 1st last, will bring up the total instalments called up to Yen 120 per share, viz., Yen 12,000,000 out of the total sum of Yen 20,000,000 subscribed to by the shareholders.

Oil on Railways.—The Federated Malay States railways have commenced trials with a locomotive burning oil fuel. Experiments with oil fuel were carried out on the Siam States Railway some years ago, and proved successful. There are running on the Petchaburi line between Bangkok and Hua Hin eight locomotives using oil fuel.

Penang-Kedah.—Construction has started at the Bukit Uertajam end of this line in the Straits Settlements. It is anticipated the survey of the whole line will be shortly concluded.

Saigon-Korat.—The French authorities in Indo-China are doing their utmost to bring about a decision in favor of connecting Saigon with Korat by rail, but the conservative Siamese are strongly opposing the proposal. It is hoped that within ten years time the Siamese network of lines will be completed, when it is hoped the Trans-Persian line will permit of through connection between Paris and Saigon.

Pnompenh-Battambong.—There are two proposals to connect these places in the South of Indo-China one that a line should run to the north of the Great Lake, the other that one should run to the south. A road is now being built along the south of the lake and that route is favoured for a railway. A mineral region is being exploited between Pnompenh and Battambong by a syndicate formed by the Banque de l'Indo-China.

Chinese Tramway Scheme.—A company is being formed to construct a tramway in the Shanghai native city. The line will run from the foreign settlement to the native city, and the city service will include a line round the site of the city wall. The wall is now being demolished. It has been arranged to purchase the materials through the Shanghai office of Messrs. Siemens China Electrical Engineering Co.

Shanghai Tramways.—The returns of the Shanghai Tramways (Foreign Settlement) for the week ended July 10 are as under :—

	1912.	1911.
	$	$
Effective receipts (after deducting loss by exchange)	15,065.80	12,145.66
Passengers carried	789,071	556,358
Car Miles run	54,647	45,148

The loss by exchange of subsidiary coinage for the week was equal to 25.36 per cent of the gross cash collected on the cars as compared with 23.40 per cent for the corresponding week last year.

German Railway Construction Co.—The Orenstein and Koppel-Arthur Aktiengesellschaft (for Railway construction especially the German colonies) for which Messrs. Beyn Meyer & Co. hold agencies has declared a dividend of 14 per cent as in 1910. The amount set aside for depreciation was increased from M. 700,000 to M. 1,760.000.

Chekiang Railway Debentures.—The general meeting of the shareholders of the Chekiang Railway held on June 11, passed a resolution for the flotation of debentures amounting to S.Y1,500,000. The debentures are to be issued at S.Y95 net with 5% or 5½% interest, and are secured with the receipts of the Hangchow-Chiahsing Railway and are redeemable in the course of 6 years.

The Shantung Railway.—The Shantung Railway Company of Berlin has declared a a dividend of 6 per cent., as compared with 6½ per cent. for 1910. This reduction was expected, because the revolution in China has influenced the receipts. The profit shares (Genuss-scheine) receive m.5 (1910, m.7½). The receipts of the railway for the month of April, 1912, amounted to $400,900 (Mexican), againts $354,000 in April, 1911, and the receipts for the first four months of the current year show a total of $1,517.000 (Mexican), being an increase of $276.000, or 22.24 per cent., on the corresponding period of the previous year.

Canton-Hankow Railway.—The final survey of the Wu-chang-Yochow section of the Canton-Hankow railway was begun on May 20. Two parties set out from headquarters, one in charge of Messrs. F. W. W. Valpy, Richards and Zandotti, the other under Messrs. M. R. Sinclair and Sandberg. The first party is working from Wu-chang, and will return to Hankow each evening while the work is close at hand. The second party went into camp about five miles from Wu-chang and is working southward from that point.

The remaining engineers, about twelve, will be sent out as soon as the necessary equipment arrives from Shanghai. The pegging out of the line to Yochow should soon be in full swing.

Kiakta-Kulun.—The negotiations for the proposed laying of the Kiakta-Kulun Railway having been brought to a satisfactory settlement, the work is expected to be commenced upon the completion of the construction of the Kiakta section of the TransBaikal Railway. The franchise for operating the proposed line has been transferred to the Russo-Asiatic Bank.

Peking-Hankow Railway Receipts.—The receipt in March from passenger fares on the Peking-Hankow line amounts to $225,732.35, and from freight $744,350.86. The total receipt for March amounts therefore to 970,082.21. For the first ten days in April last the total passenger receipt was $97,115.19, and freight receipt $281,715.19, while for the corresponding period in March last the passenger and freight receipts were $42,632.05 and 214,717.36 respectively. A glance at these figures will show that we have a very bright and promising future for all our railways says the "Peking Daily News."

Kowloon Railway Terminus.—The Hongkong government has made an extensive purchase of land for a railway terminus. It has closed a deal for the land of the Kowloon Land Reclamation Company and the property of the Hongkong and Kowloon Wharf and Godown Company, and will pay for the two the sum of $1,500,000.

This deal settles a question that has been hanging fire in Hongkong for many months. The Hongkong and Kowloon wharf and godown company owns the land immediately contiguous to the present temporary terminal and the Reclamation company, organized several years ago, purchased land in Kowloon reclaimed by the government, and is again selling it back to the government. The plans for the terminal call for extensive shops and sidings in Kowloon.

Proposed Railway from Chaochowfu to Hweichowfu. The consulate in its annual trade review in Daily Consular and Trade Reports for December 22, 1911, reported that a railway line from Chaochowfu, a prefectural city about 25 miles northwest of Swatow and connected with it by rail to Hweichowfu, another prefectural city, about 60 miles northwest of Kowloon (Hongkong), was under discussion. The recent revolutionary activity throughout the Province caused this, together with many other projects, to be temporarily abandoned, but, according to the Canton press (vernacular), the matter is being taken up again. It is reported that at a meeting of Hweichow and Chaochow merchants the following preliminary regulations for the proposed company were accepted:

1. That the name of the company should be the Merchants Hwei-Chao Railway Co. (Ltd.)

2. The length of the line shall be 246 miles (English), which will be divided into four sections as follows: First section, Chichshih Bay to Hweichow; second section, Hweichow to Haifung; third section, Haifung to Puning; fourth section, Puning to Chaochow.

3. The capital shall be $20,000,000 Mexican (about $9,100,000), to be divided into 4,000,000 shares.

4. The shares will be of three classes, namely, (*a*) 30,000 founders' shares, (*b*) 500,000 preferred shares, (*c*) balance ordinary shares.

Should this line materialize, it is reasonable to suppose that an extension will be made from Hweichowfu to connect with the railroad line into Canton. The prospects for raising so large a sum as $9,100,000 locally are not bright at present. So far as I can learn no survey of the route has been made, but there are few, if any, geographical difficulties. Chichshih Bay is on the coast about midway between Swatow and Hongkong. It is not open to trade, but is reported to be a good harbor. There was some talk of fortifying it as a naval base last year.

DOWNIE DEEP WELL PUMPS

The Keystone Driller Company, of Beaver Falls, Pa. U.S.A. has issued a tenth edition of its catalog on Downie Deep Well Pumps. In addition to their world wide reputation as the leading drilling machine manufacturers of America, this company is securing equal fame for their deep well pumps. These pumps are entirely independent of the well are suspended from the top; may be withdrawn at any time without disturbing the well, and all parts are always accessible for repairs. They are constructed on the principle that "anything worth doing is worth doing well."

Catalogue No. 6 sets forth the construction and operation of the pumps so clearly that any good mechanic should be able to install any of them.

SCHERZER ROLLING LIFT BRIDGES

Recent orders of the Scherzer Rolling Lift Bridge Company show a substantial and continued growth of business, and include many notable foreign orders, among which are a double track railway and combined highway bridge for the Great Central Railway, England, across the Trent River, having a movable span of 160 feet and a width of 53 feet 6 inches out to out. This bridge will be the widest and heaviest movable bridge yet constructed in Great Britain. Two Scherzer Rolling Lift Bridges have recently been completed for the Dublin Port and Docks Board at Dublin, Ireland, and a large railway and highway Scherzer Rolling Lift Bridge is nearing completion for the Swansea Harbour Trust at Swansea, Wales. The very large Scherzer Rolling Lift Bridge under construction across the Nile River at Cairo, Egypt, is rapidly nearing completion and is expected to be in service within a few months. The Buenos Ayres Great Southern Railway Company have recently placed under construction the fourth Scherzer Rolling Lift Bridge in the process of modernizing and extending their terminal facilities at Buenos Ayres. The South Indian Railway Company in the process of extending their line toward the Island of Ceylon are constructing a double leaf Scherzer Rolling Lift Bridge having a movable span of 225 feet.

Within the United States and Canada more than one hundred and fifty Scherzer Rolling Lift Bridges have been constructed and placed under construction. The more recent railroad bridges placed under construction include a double track bridge for the Central Railroad Company of New Jersey, a double track bridge for the New York and Long Branch Railroad Company, and bridges for the Southern Railway Company, Savannah, The Atlantic Coast Line, Navassa, North Carolina, Aransas Harbour Terminal Railway, Wildwood and Delaware Bay Short Line, the Canadian Pacific Railway at Fort William, Ontario, the Canadian Northern Railway across Salmon River and another across Rideau Canal.

The recent orders for electric railway and highway bridges have been especially numerous, including some very large and wide structures notably a double leaf structure at Toledo, Ohio, having a movable span of 211 feet center to center of bearings and a width of 70 feet: others at Lynn, Massachusetts: Huron, Ohio: Troy, Ohio: Minster, Ohio: Sagamore, Massachusetts: East Chicago, Indiana, Kimberly, Wisconsin.

All of these structures are designed by the Scherzer Rolling Lift Bridge Company, having main offices in the Monadnock Building, Chicago.

RESTORATION OF TELEPHONE SERVICE IN 98 HOURS

CENTRAL OFFICE IN KANSAS CITY TOTAL LOSS AFTER FIRE

The Missouri and Kansas Telephone Company's Fairmount Exchange at Kansas City, Missouri, was completely destroyed, on Sunday, October 22nd at 3 A.M., by a fire which is believed to have been caused by an explosion of gas in the house adjoining that in which the central office was located. The telephone company at once communicated with the Western Electric Company and the work of restoring service to the subscribers was begun at 9.00 o'clock of the same morning, when a dozen men from the electric company's local installing force appeared upon the scene.

The Hawthorne factory of the Western Electric Company was called upon by long distance telephone to make a hurry-up shipment, and responded by sending forward the necessary apparatus by express the evening of the day on which the fire occurred, thus supplementing without delay the work which was being done by the local house in rushing material to the building in which the new exchanged was to be housed.

The new switchboard equipment consisted of several sections from the telephone company's stock, and some from an addition which was to be installed at the Rosedale Exchange, on account of the increasing business in that district. Twenty-six installers reported for work on Monday morning, October 23rd, and from that time until the new boar was cut in service at 5.00 A.M. October 26th, with a full equipment of 800 subscribers' lines, a day and night crew were at work continuously.

Taking into consideration the fact that the work was done under high speed conditions, in order that the subscribers might not be inconvenienced for an extended period, it is worthy of note that the trouble reports issued as a matter of routine by the telephone company indicate that the work of the Western Electric Company's installing force was so well done that a minimum of trouble was experienced after the new equipment was cut into service.

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SHANGHAI AND MANILA, AUGUST, 1912

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mentioned in connection with the general advisership. Mr. Rockhill like Dr. Morrison is a firm believer in China and the Chinese people, and has an invaluable knowledge of the country and its politics. Sir Francis Piggott, formerly Chief Justice in Hongkong and at one time adviser to the Government of Japan was mentioned for an appointment to the legal department but this post has since been tendered to Prof. N. Ariga, the eminent Japanese jurist. Sir Robert Bredon, whose career is too well-known to need emphasis, is mentioned in connection with the Customs. In connection with the Posts and Telegraphs Mr. Theo. Piry is spoken of. He has had the advantage of a very intimate and through knowledge of the department.

Commandant Brissand Desmaillets of the French Army has been nominated to the post of adviser to the President in military affairs, but the nomination has been objected to and the appointment of a military adviser seems to be in abeyance. This is the case also in regard to naval, commercial, agricultural and educational affairs. Now that a beginning has been made, however, it may be expected that substantive appointments of foreign advisers in all departments will shortly be announced and an important step thus taken towards the reorganization of China.

RAILWAY ADVISERS

To the readers of **The Far Eastern Review** the posts of Advisers to the Railway Department are probably the most important, as on the selection of competent and broad minded men for this work hinges to a large extent the future equipment of the projected network of lines which must cover the country. Several well-known men have aspired to this post.

The fear of creating a situation in the Railway Department where under given conditions, they could be compelled by diplomatic pressure, to cede permanent foreign control during the currency of existing railway loans has cause the Chinese to hesitate before committing themselves to accepting the services of a strong, capable Adviser. The danger of duplicating the conditions existing in the Customs, has been the real reason why China has steadily refused to employ a foreign railway consulting engineer, in this capacity. It is just possible that if China was approached from a different angle, and urged to employ foreign consulting engineers, general traffic director, or other specialists in their various departments all under the control of the Minister of Railways, and responsible to him alone, there would be some probability that the recommendations would receive more careful consideration.

The attitude of **The Far Eastern Review** towards the employment of Railway specialists under the name of Advisers, has already been set forth in previous issues. There is too much at stake for foreign manufacturers of railway material for us to advocate the appointment of any particular man for the post of general Railway Adviser, or Consulting Engineer. It is extremely difficult, if not altogether impossible, to find a competent railway engineer of any nationality free from the prejudices of his class, and who would give to manufacturers of countries other than his own, a square deal in the drawing up of specifications for materials.

To obviate the certain clash that would arise by the appointment of a Railway Adviser of any given nationality we are of the opinion that the one safe and sane course for the Chinese Government to pursue is to appoint a temporary commission of expert foreign railway engineers, composed of one British, one American, one European, and at least two of her own best men such as Jeme Tien-yu or Yen Te-ching, with full powers to draw up a standard set of specifications for the rolling stock and equipment of Chinese Government lines. Or, as an alternative, there must be some elasticity in the specifications drawn up by the engineers of various lines, that will permit manufacturers of all nations a fair chance to compete.

For the above reason **The Far Eastern Review** considers the appointment of any Railway Adviser whose powers would permit him to unduly discriminate against manufacturers other than those of his own nationality as inimical to the best interests of China. For the observance of Fair Play and the maintenance of the Open Door or principle of Equal Opportunity for all, and to avoid future ill feeling, which must lead to diplomatic protests on the part of foreign Powers, the course suggested above is the one safe guide for China to steer by.

This is the only phase of the matter which interests foreign manufacturers.

If China desires a Railway Expert, and avoid international friction in the future, there is ample scope for his useful employment in reforming the administrative and traffic departments of the service. Here awaits a brilliant field for some one to make a record in, providing China is willing to follow his advice. The appointment of a high class efficient Foreign Traffic Director who would devise some system of uniform rates and traffic management, and increase the earning capacity of the lines, would undoubtedly meet with the hearty approval of all national interests.

Mr. A.W.U. Pope, C.I.E., who has had 30 years experience in Indian Railways and enjoys a reputation justly earned as a capable Traffic Director and general Railway Manager, has been mentioned for a post in the Railway Department. Mr. Pope's work as General Manager of the S.-N. R. is reviewed at length in another column. His record on this line, speaks for itself.

SIDELIGHTS ON THE MANAGEMENT OF CHINESE RAILWAYS

THE SHANGHAI-NANKING RAILWAY

Probably no railway in China has been subjected to more criticism than the line from Shanghai to Nanking, built under a loan agreement between the Chinese Government and the British and Chinese Corporation, Ltd. Most of these criticisms have emanated from the Chinese, and arose primarily because of the capital cost per mile of line, which, including flotation expenses, purchasing commissions, interest and other charges exceeded the cost of other similar lines constructed in China. The charge of extravagance was freely made. Owing to the expensive character of the line and rolling stock, and the Chinese likin tax system operating against any large freight traffic, it was maintained that it would take many years before the line could begin to pay its fixed interest charges. These conditions were fully set forth in the Special Issue of *The Far Eastern Review* of November 1909, on "*Railways in China*," and the history of the line to 1907 was fully given in the admirable Report of Mr. Collinson, the Engineer-in-chief. This report still stands as the only complete and technical exposition of the itemized cost of constructing railways in China, as no other engineer or railway director has permitted full publicity to these important details. In January 1907, a competent Foreign Traffic Manager was appointed, and from this date the open work of the line may be said to have started. The railway at that time was opened to traffic as far as Wusih or only 90 miles. The dates the various sections were opened to traffic, are as follows:—

Section	Date Opened to Traffic	Miles	Total Mileage
Woosung Line	9/10/1904	10.19	10.19
Shanghai-Nansiang.	20/11/1905	10.70	20.89
Nansiang-Soochow & Wusih.	18/7/1906	69.10	89.99
Wusih-Changchow.	15/5/1907	24.14	114.13
Changchow-Chinkiang.	15/10/1907	46.40	160.55
Chinkiang-Nanking.	1/4/1908	42.68	203.21

It is from this date then that the operation of the line should be studied, and although laboring under heavy handicaps the results obtained should form the basis of further comment.

During 1907 the working accounts were complicated by the existence side by side with the open working line, of a great amount of capital work for completion of the still unopened sections. Part of the cost of operation was thus debited to capital, and engineers and others who served both open line and construction draw salaries debitable to both heads. The Railway was still administered by the Board of Commissioners with a Foreign Chairman, and consisted of three Foreigners and two Chinese, one of the former being the Engineer-in-Chief, ex-officio. It was not till June, 1908 that the proper open line work began. The Administration was then altered. The Foreign Chairman and Board of Commissioners were superseded by a Chinese Managing Director, to whom was entrusted the duties of the Board but subject to its general appellate control. The Chinese Managing Director in turn was advised and supported by a General Manager, responsible for all the technical work and guidance of all the various technical heads of departments.

(*Continued from page 107*)

foreigners. His task is one of great delicacy owing to the element which exists across the border at Chapei with apparently no other intent than to cause an open rupture of present relations.

In June 1908 the undertaking began to bear all the working cost as a revenue earning project, and all charges to capital were practically closed. In other words the history of the Railway commenced from that period.

The results year by year from 1908 to 1912 are as follows:—

Year.	Gross Earnings				Working Expenses		Net Earnings $	Increase or Decrease $
	Passengers $	Goods $	Sundries $	Total $	$	% on C. E.		
1908	1,393,977	141,219	75,282	1,610,478	1,092,663	67.85	517,815	
1909	1,552,655	189,110	54,318	1,796,083	1,214,517	67.62	581,566	63,751
1910	1,766,827	207,889	43,633	2,018,349	1,390,678	68.90	627,671	46,105
1911	1,945,417	239,163	66,492	2,251,072	1,490,186	66.20	760,886	133,215
For ½-year ended June 1911	891,991	131,493	34,180	1,057,664	690,232	65.26	367,432	
For ½-year ended June 1912		152,874	26,568	1,407,000	821,000	58.4	586,000	(a). 205,429

(a) It will be noticed that the improvement for the *half*-year ended June 1912 is greater than that for any two of the previous *years* put together.

It will be seen from the table that the gross Revenue has increased yearly; the working expenses have steadily decreased in percentage on the gross Revenue, and the net Revenue has increased in the same proportion, till now, with the available figures up to July, 1912, the gross Revenue in 6 months is nearly $400.000 better than last year. The working expenses will be 8% less than last year, and 6% less than the budget. The net revenue for the half year ending June, 1912, will show a greater increase than any whole year did before that time, and the line will almost pay its 5% guarantee in the fourth year of its open line work.

These figures are highly eloquent and speak for themselves. It will be noted that the increase is traceable to the passenger earnings, and the line is reversing the accepted theory that revenue must come from the freight or goods traffic. It is interesting to study the methods whereby such a result was secured.

A. W. U. Pope, C.I.E.
GENERAL MANAGER

Mr. Chung Mun-yew
MANAGING DIRECTOR

E. J. Dunstan
LOCOMOTIVE SUPERINTENDENT

(SHANGHAI-NANKING RAILWAY OFFICIALS)

When Mr. Pope assumed charge of the traffic department of the line, in January 1907, the passenger rates corresponded with those in force on other Chinese government lines, as follows:—

6 cents (Mex.)	per mile	1st Class.
3 cents	„ „	2nd „
2 cents	„ „	3rd „

A careful study and analysis of the capital cost of construction of railways in other parts of the world, and especially in India, where conditions are similar to those in China, convinced the new Traffic Manager, that the rates charged by the Shanghai-Nanking Railway were unduly excessive and that no great increase in traffic could be hoped for unless the fares were reduced to the lowest possible point. The third class fares in England, where the average capital cost per mile is over £67,500 was 3½ cents (Mex.), and even in the United States the average 3rd class rate was about 2½ cents. The average capital cost of Indian Railways works out to about £9,100 per mile, and the average of the actual 3rd class fares charged was about ⅔ of a cent.

As the average capital cost per mile in China, conditions of living, scale of wages, quality of transportation and other railway characteristics were almost identical with India and taking into consideration that the Indian Railways had been built up under a fixed policy extending over a period of 26 years of low passenger rates (averaging ⅔ per cent per mile) producing an average net profit representing 5% on the capital invested, the Traffic Manager of the Shanghai-Nanking Railway line forcibly advocated a lowering of the rates then in force.

With the lowest passenger rate of nearly 2 cents a mile, the fare between Soochow and Shanghai (54 miles) was $1.05. The boat and launch service plying on the creek and canals between these two populous centers, carried passengers at 50 cents a head. This included two free meals, and a place to sleep, with the additional advantage of discharging the passenger in the center of the cities, instead of the outskirts. Under such conditions it was evidently absurd to expect them to travel by the Railway at more than twice the fare. To meet and overcome this severe competition it became imperative to lower the rates to at least one cent a mile, or forego any hope of building up a profitable railway passenger business.

As a result of Mr. Pope's recommendations the Board authorized a general modification of fares, which although not on a strictly mileage basis, worked out approximately to one cent a mile for 3rd class, two cents a mile, 2nd class, and four cents a mile for 1st class.

In other words the Board adopted the maximum 3rd class rate in India, as the minimum of the Shanghai-Nanking Line. The schedule of maximum and minimum passenger fares in India applicable to all railways, as fixed under Government Orders dated 16 July 1891, and modified Dec. 14th 1896, is as follows:—

	Maximum per mile.	Minimum per mile.
1st Class.	18 pies (6 cts.)	12 pies (4 cts.)
2nd „	9 „ (3 „)	6 „ (2 „)
	a little over	
Intermediate	4½ „ (1 ct.)	3 „ (1 „)
3rd Class.	3 „ (about 1 ct.)	1½ „ (½ „)

As a result of these rates, the passenger traffic in India has increased since 1892 from 127,000,000 to 371,000,000 in 1910, and the receipts from £5,163,000 to £11,413,600, an increase of 121 per cent in the same period. This policy which had operated to such good advantage in India when put into practice in China worked out along the same lines, and the increase in passenger traffic on the S. N. R. was immediately noticable. A comparison of earnings between Shanghai and Wusih in 1907 under the reduced rates, with the same period for the preceding year 1906, showed that in 1907, the number of passengers carried was 534,054 earning $196,168 as against 196,505 passengers in 1906 earning $105,551. Pending the abolition of the Likin Tax Charges which operate against any large increase in the goods traffic, it is only by the development of the passenger traffic at the lowest rates that the line can hope to pay, and the steady increase in this traffic as shown on the table forcibly testifies to the wisdom of the policy.

TABLE A

Year.	Imperial Railways of North China, Number of Passengers.	Average Mileage worked.	Average No. per mile worked.	Shanghai-Nanking Railway. Number of Passengers.	Average mileage worked.	Average No. per mile worked.
1905	3,137,754	564	5,563	Not open	—	—
1906	3,363,206	562	5,984	982,637	53	18,540
1907	3,276,202	572	5,728	1,843,450	115	16,030
1908	3,202,967	600	5,338	3,273,790	192	17,051
1909	3,603,303	603	5,976	3,538,701	203	17,432
(for 15 months)						
1910	3,239,158	603	5,372	4,488,052	203	22,109

The following gives the money values for the above:—

Year.	Imperial Railways of North China. Amount earned for Passengers.	Average mileage worked.	Ave. Receipts per mile worked.	Shanghai-Nanking Railway. Amount earned for Passengers.	Average mileage worked.	Ave. Receipts per mile worked.
	$		$	$		$
1905	5,136,771	564	9,108	Not open	—	—
1906	5,755,828	562	10,242	328,485	53	6,198
1907	5,046,139	572	8,822	763,938	115	6,643
1908	4,893,633	600	8,164	1,393,591	192	7,258
1909	6,043,573	603	10,023	1,552,258	203	7,647
(for 15 months)						
1910	5,141,402	603	8,526	1,766,388	203	8,701

It will be noticed that whereas on the Nothern Railways there was a distinct downward tendency for the four years ending 1909 (due allowance being made for the extra 3 months figures in that year) with an increasing mileage, the Shanghai-Nanking Railway shows a steady and marked upward tendency.

In view of the undoubted success of the low rate of 1 cent per mile, resulting in such a remarkable passenger development on the S.N. Railway it is interesting to compare the results with those secured on the Government Railways of North China. This line is also mortgaged to the British and Chinese Corporation, and under the terms of the loan, has a foreign Director, Engineer, Traffic Manager and other important officials.

This line holds an enviable position amongst railways, returning about 18 per cent profit in the capital invested. A third class rate of 2 cents per mile is charged on the Northen Railways. It has no water competition and enjoys the advantage of longer hauls. The published accounts of the Northern compared with the Shanghai-Nanking line show the following:—

(*See Table A*)

We have before us the published returns of the Peking-Hankow Line and a further comparison with the results of this Railway where the 3rd class fare is about 2 cents per mile, is also interesting and elucidating.

Year	Total number of passengers	Mileage worked	Average per mile
1906	1,418,037	787	1,802
1909	1,886,817	815	2,315
1910	2,165,837	815	2,657

The money values of the above are:—

	$		$
1906	2,459,906	787	3,126
1909	3,153,310	815	3,869
1910	3,688,131	815	4,525

It will be seen that the above compare very unfavourably even with the figures for the Imperial Railways of North-China and still more so with the figures for the Shanghai-Nanking Railway. The 3rd class fare is about 2 cents a mile (Peking to Hankow distance 752 miles, fare $15,00) and the figures quoted afford a striking comment upon the fact.

It is clearly evident that the rate policy laid down by Mr. Pope and wisely adopted by the Board, if left alone for a number of years must bring satisfactory results to the bondholders and the Chinese Government. The figures show that the Shanghai-Nanking Railway is now carrying more passengers per mile open, than any railway in India or China, and nearly as many per mile of line operated as some of the busiest metropolitan railways in the world. The earnings are steadily increasing, and the proportion of working expenses to gross earnings are decreasing with the result that for 1911 the line has practically paid 2½ per cent on the nominal value of the Loan Bonds or nearly half the interest charges, and at the present rate of increase it will cover the 5 per cent on its capital in the next working half year. Such a result considering the handicaps under which the line is operated is highly creditable to the management, and comes within the limits of sound railway principle as incorporated in the Indian Government Railway code. To be classed as productive work and sanctioned for construction by the Government, a railway in India must show good reason to believe that it will earn its guaranteed interest in 5 years after it has been constructed and open to public traffic. In India under a fixed sympathetic policy and close harmony between the government and railways, where the dominant idea is to smooth over difficulties and facilitate the development of the lines, this five year limit is a liberal one for the railway management.

If any credit is due to the management of a line in India, which pays its guaranteed interest in five years a much larger measure of praise is fairly due to any railway manager in China who in the same period reaches the desired goal, in the face of existing conditions.

In the management and operation of a railway in China, under a system which creates sinecures for the employment of a horde of hangers-on and political favorites, it is natural that the percentage of operating expenses would be much larger than if true economy was practised and the lines operated as a purely business proposition. The history of State owned and operated lines is the same in most parts of the world, as political influence is generally stronger than efficiency and merit in securing employment. This system has reached its limit in China, where two or more employees are found to do the work of one, and on some railways there are three station masters who stand around look wise, sport a uniform, draw the pay and pocket the squeeze while one man does the real work. And yet the lines pay.

On lines under the direct control of the Chinese Government such practices are their own concern and is nobody's business. Even on loan built lines, which are the property of the Chinese Government and the earnings mortgaged to the financing syndicates, the practice of overloading the pay roll with an excessive Chinese staff, is also a matter which concerns only themselves, provided the interest on the bonds is regularly paid. If the Chinese Government feels that it is necessary to employ a large Chinese staff to check the work of the foreign officials or educate its people in railway operation, and is willing to pay for this luxury and saddle the road with extra expense, or in other words if they wish to take their share of the profits by distributing it in patronage, and make up the deficiency in the interest on the bonds from other sources, it is still their own business.

The foreign managers of loan built roads contend that if they were freed from the excessive number of Chinese employed in sinecures, the profits of the lines would be greatly increased and the working expenses reduced to a percentage on gross earnings far below any other railways in the world. On the other hand the Chinese justify their position on the grounds that the lines are the property of the Chinese Government, and employment should be found for Chinese wherever possible. and that the foreign staff should be reduced to a minimum. They maintain that the loan agreements have saddled the lines with an excessive and expensive foreign staff which could be greatly reduced, and the work done by Chinese and the same results secured. If the Chinese selected honest and efficient men they would be amply justified in their stand, but until such time as they develop trained railway men, the foreign staff must be accepted if the roads are to be financed and constructed with foreign capital. In reviewing the work of a loan built railway in China, ample allowance must therefore be made for this attitude of the Chinese Government, and its bearing on the financial results, which in turn reflect on the efficiency of the foreign management of the enterprise.

It is natural that both foreigners and Chinese should strive for increased pay, and that both sides would advocate the cutting down of the others salaries to increase their own. Hence a source of continual friction and dispute.

But granting that either side is justified in their stand, the fact remains that a great cut could be made in salary lists without injury to the railways, a reduction that would instantly be made, if the foreigner had full sway, or if the lines were operated by a private company, where profits were the first concern. As it is now, the operating expenses are unduly increased, and in the case of the Shanghai-Nanking Railway, delaying the time when the bondholders can secure a percentage of the profits under the terms of the loan agreement, and the Chinese Government is saddled with an unnecessary drain on its treasury. The Chinese on their part also advance the argument that the foreign staff is overloaded and that by practicing economy at this end a similar saving could be made, by reducing their salaries or employing Chinese in their stead. This situation is an interesting side light on the cost of operating a loan built railway in China.

It is quite clear however by admitting the justice of either side of the argument, that the operating cost of the Shanghai-Nanking Railway, could readily be reduced to a figure representing 50 per cent or less on the Gross Earnings without in the least impairing the efficiency of the line.

Aside from the gratifying results shown in the financial returns, the line has passed through a trying ordeal during the Revolution which taxed its limited carrying capacity to the utmost. The line was ill prepared to meet the urgent demands on its service by the revolutionary leaders for the transportation of troops to attack Nanking. The railway was barely equipped and manned for operating the regular daily service, and no provision had been made for running trains at night. By utilizing the road during the day for the usual passenger traffic, which was greatly augmented by the wholesale exodus of families from towns along the line seeking the safe precincts of Shanghai, and employing the same rolling stock at night for the transportation of troops and supplies to the front at Chinkiang and beyond, the line was able to fulfil all demands made on it by the public and the army.

The revolutionary leaders have freely admitted that their success in capturing Nanking was greatly facilitated by the able management of the railway during the crisis, thus enabling them to concentrate the army at the front without loss of time. So it may be fairly said that the management of the Shanghai-Nanking Railway has earned a place for itself which entitles it to all credit for the remarkable financial showing made, and praise for the skilful manner in which it was operated when put to the severest test that can be imposed on a railway.

The success of the line is largely due to the efficiency of the Managing Director, Mr. Chung Mun-yew, one of the ablest officials of China. His intelligent grasp of railway matters, and cordial co-operation with the foreign General Manager, Mr. Pope, has made possible the excellent record above outlined.

A SIDELIGHT ON CHINESE CONTROL OF JOINT-STOCK COMPANIES

CHINA MERCHANTS' STEAM NAVIGATION CO.

The cancer of corruption which has played such disastrous havoc with so many industrial enterprises under the management of Chinese has now brought the China Merchants' Steam Navigation Company to the verge of ruin. This, and the Han Yeh Ping Corporation (the Hanyang ironworks, Ta Yeh iron mine and Ping Hsiang Colliery Co.) are the largest Chinese managed concerns in the country, and both are in financial difficulties. The C.M.S.N. Co. is the only existing Chinese shipping enterprise of any magnitude exclusively controlled by Chinese, and the deplorable state of its affairs has been brought to public notice by the laudable efforts of a new Board of Directors to institute reforms, and the strenuous labors of the company's employees to baulk any measure destined to change the old order under which they lived and grew financially fat at the expense of shareholders. Men well-known in China and the world like Wu Ting-fang and Wen Tsung-yao have been compelled, as Directors of the company, to publicly denounce the insidious corruption marking the working of the business, and the pother occasioned by the attempts to introduce reform has been so keen and has brought the concern so much into the public eye that it is interesting to trace its history and outline the steps which have led to the unpleasant and impossible situation in which the Directors and the shareholders find themselves to-day.

The Company owed its origin to the activities of two expectant Taotais of Tientsin in the latter part of the reign of Tungchih about 1872. They were Sheng Hsuan-huai (whose railway nationalisation policy of 1911 may be said to have precipitated the recent revolution) and Chu Yuen-fu. Being of a commercial turn of mind, these men evolved the idea that the transportation of the tribute rice then being carried by junks on the Grand Canal from the Southern provinces might be profitably done by steamers, and receiving a favorable reply to a memorial on the subject sent by them to Li Hung-chang, then Viceroy of Chihli, they chartered two steamers, and commenced the work. It was not profitable. Expenses were so heavy that they were compelled to cast about for a means of averting further loss, and they endeavored to form a company. An appeal to merchants for funds met with no response, and even the solicitations of Tang King Shing—who was then compradore of Messrs. Jardine, Matheson & Co., and who was held in high esteem by both Chinese and foreigners, failed to produce material assistance for some time. Eventually, however, he enlisted the sympathies of a Cantonese tea and silk merchant, Hsu Yu-chih. In 1877 they negotiated with Russell & Co., managers of the Shanghai Steam Navigation Company, for the purchase of that company's fleet, and with a definite proposition to offer they were able to secure the support of the Nanking Viceroy, and, as a result, the Imperial Government contributed Tls. 2,000,000 with which to effect the purchase of the 17 vessels and the landed property, wharves, etc., of the S. S. N. Company. Thus the China Merchants S. N. Company became semi-official, though the officials dropped out when subsequent operations brought losses, the Tls. 2,000,000 being deducted in instalments from the amount due by the government for freight on rice, though the Government retained its representatives on the Directorate.

Keen competition by Jardine, Matheson & Co., and Butterfield & Swire, brought continued losses instead of profits, and a conference led to a 10-year agreement to sustain uniform freight and passage rates, the agreement being renewed at the expiration of the period. It obtained, in fact, until the Franco-Chinese war, when the C. M. S. N. Co., decided to sell their vessels and property to avoid loss by seizure. Russell & Co. became the purchasers, the price paid being Tls. 5,000,000. The Censors in Peking did not fail to make a note of this transaction, and upon the conclusion of the war they impeached Ma Mei-su, the general manager who effected the sale, for disposing of the company to foreigners. Shen Hsuan-huai and Hsu Yu-chih consequently brought their influence to bear to recover the property from Russell & Co., but only succeeded in doing so after agreeing that all arms and ammunition required by the Government should be bought through Russell's house. The purchase price was the same as that paid, Tls. 5,000,000.

Rate cutting by the opposition firms again caused the Company heavy losses until the agreement for uniform rates was renewed, and Ma Mei-su was removed from the managership. Shen Hsuan-huai then stepped into the vacancy and became Director-general, and from that time (1885) the property began to rise in value. In 1892 the Company bought the godowns at Pootung (Shanghai), and the present offices in

feet below the ground level. In drilling this well slate without bearing formation was drilled through to a depth of nine hundred feet, at which point sandstone of a close grain variety was encountered. No water of any kind was found between nine hundred feet and one thousand and fifteen feet, at which point the flow was obtained. The water is of excellent quality, and while the amount produced is small it is sufficient to supply the inhabitants of the town of Wright, Samar, if economy is used. The machinery that was used in drilling this well is now being moved to Sumarraga Island, near Wright, Samar.

RAILWAYS

Moscow-Peking Railway.—The *Koelnische Zeitung* reports from St. Petersburg that Mr. Kokovtzev, the Russian Premier, has examined plans for the construction of the Moscow-Peking Railway and promised to guarantee the interest on the capital needed for its construction.

Two alternative routes are spoken of in connection with this route.

According to the plan, one of them, which may be called the Northern line, would utilize the present Siberian line as far as Tcheroniginsk or Irkutsk, and also a part of the Baikal line runs to Kiakta, whence it will proceed to Peking, via Changchiakow, passing through Mongolia. The line is the shorter of the two, the total length being about 1,200 (Russian) miles. The construction of a railway connecting Changchiakow with Kiakta was projected and suggested to the Russian Government by General Torunisin two years ago, but the suggestion was not accepted by the Government.

The other line, or the Southern line, provides for an entirely new construction. Starting from Moscow the line will reach Semipalachensk, via Suizuran, Samala, and Orenburg, and running Northward from Semipalachensk, taking a course parallel with North Latitude 50, will reach Kiakta traversing through the Mongolian plain, then going to Peking via Changchiakow. The construction of the line involves great difficulties and immense expense, it being necessary to develop a new route in the waste land and the Gobi desert. It is also necessary to construct a new trunk line between Moscow and Semipalachensk utilizing a portion of the Orenburg-Tashkend Railway. That line alone extends for about 2,500 (Russian) miles, about one-third of the entire mileage between Moscow and Peking. In addition the line between Semipalachensk and Kiakta covers 3,000 (Russian) miles and that between Kiakta and Changchiaknow 1,200 (Russian) miles.

These two lines were at first strongly opposed by the Russian Government, but in consideration of the report that the land survey of the projected railway has been already started, it is probable that an understanding has been concluded between the Russian Government and the American-German syndicate, perhaps adopting the Northern line.

It is also reported that the Chinese Minister in St. Petersburg has had some connection with the project from the beginning.

Effect of the Yunnan Line.—A correspondent at Yunnan writes as follows: The advent of the French railway giving the people of Yunnan direct access to the sea at its nearest point, and the constant contact and unremitting pressure that the railroad supplies as between an enterprising people on the one hand and a phlegmatic unwilling population on the other, one can easily see how the whole situation has been modified and complicated by the coming of the iron road. This province promises to become a bone of contention both politically and commercially—just now French, British, German and to some extent American firms are competing for and urging on the Chinese the rival merits of their respective houses for the supply of equipment for projected railroads, mines, etc., and needless to say it places the Chinese in a very embarrasing position. There are rumors of a small French loan having been made to ease the financial pressure at one point, but it is so small as to be of little use to any scheme of development. Just at present the railroad is suffering from its usual summer complaint; the mountains have commenced their annual campaign against the road and traffic is much interrupted. The cost of maintenance is a formidable item in the operation of the railway, especially as most of the hills are quite bare of trees and most of our year's rain falls in a brief space during the summer. The erosion is very great and tends to demoralise the railway schedule for the summer months.

South Manchuria Railway.—The South Manchuria Railway Co's. gross receipts for the half year ended March 31, amounted to Y 16,701,912.867, which, when compared with the receipts of the corresponding term during the previous year, shows an increase of Y 1,335,469.014. The total amount paid out by the Company was Y 13,290,373.301, which is also an increase of Y 999,253.538 over the disbursements made during the same term of the year before. From this, it will be seen that the Company's net profit amounts to Y3,411,319.475, an increase of Y 336,215.435 over the gains acquired during the corresponding six months a year ago. Below is given a statement of profit and loss of the Company for the present term.

RECEIPTS.

Railways	Y. 11,202,163.
Ships	217,068.
Mining	3,492,756.
Harbor	716,581.
Local	230,102.
Hotels	112,102.
Electricity	400,400.
Gas	81,764.
Miscellaneous Profits	62,175.
Interest	1,778,787.
Total	16,701,912.

DISBURSEMENTS.

Railways	Y. 3,585,051.
Ships	261,420.
Mining	2,265,356.
Harbor	619,140.
Local	564,327.
Hotels	140,268.
Electricity	321,734.
Gas	46,739.
Miscellaneous expenses	1,610,461.
General expenses	923,385.
Interest	2,724,555.
Difference on the face value of debentures and the actual amount received	176,023.
Total	13,290,373.

Electricity on the Karuizawa Line.—The electric generating stations and other necessary buildings, which have been in course of construction by the Eastern Lines Superintendence Office of the Imperial Railway Bureau, with a view to running trains equipped with electric locomotives over Ushi pass, on the Shinetsu line, have been completed.

S.M.R. Traffic Returns.—The South Manchuria Railway Traffic Returns for the month of July give the daily average of Y 35,217, being an increase by Y 8,569 over the corresponding period of last year.

New S.M.R. Box Cars.—Sixteen box cars, completed at the Shahokou Railway Workshops at the end of last month, passed a trial operation, and will be brought into service for the transportation of Beans on the advent of the new Bean Season.

S.M.R. Locomotives.—Two railway locomotives were completed at the Railway Workshops at Shahokou on August 3. They passed a trial run to which they were subjected later. This has raised the total number of the Company's locomotives to 256.

Canton Hankow Line.—The Civil Governor at Wuchang has held a conference with the leading members of the Hupeh Government at which it was decided to instruct the Hupeh Government Bank and the Railway Bureau to give a detailed report of the funds collected from the merchants and rich families as shares for the construction of the Canton-Hankow Railway and the Szechuan-Hankow Railway. They will be also asked to give a report of the lands bought for the line of the railway. A list of all the members of the old staff of the Railway office will be delivered to the New Railway Office so that they may be examined and employed if suitable.

The Canton correspondent of the "Hongkong Telegraph" writes that Mr. Tam Yun Fung, Director-in-Chief of the Canton-Hankow Railway, intends to divide the whole length of the line into three sections, on which work will be commenced simultaneously. The first section will be from Wuchang to Ngokchow; the second section from Ngokchow to Wingchow; and the third section from Wingchow to Canton. Mr. Ching Ming-chiu will be appointed manager of the first section; Mr. Chau Yau-loong, manager of the second; and Mr. Jim Tin-yau, manager of the third section, in addition to his duties as Deputy Director-in-chief of the Railway, which latter appointment has just been announced.

Mukden-Itungchou Railway.—The old scheme of connecting Mukden by railway with Kirin, via Hailungcheng, Itungchou, and Shuangyangho, has been revived by Chairman Liu, of the Chinese Guild, Kirin says the "Manchuria Daily News." The Chinese Guild has approved of this scheme, and the share capital is open for public subscription. The promoters wish to take up first the Mukden-Itungchou section with the object of building a branch line from Itungchou to Changchun. Their idea seems to be to attract to their railway the Chinese passenger traffic from Changchun which is only 30 miles from Itungchou.

Tokyo-Shimonoseki Express.—The inauguration of the Limited Express Trains between Tokyo and Shimonoseki has been a popular departure on the part of the Imperial Japanese Railways. The new service was started in June. The trains leaves the Shimbashi station at Tokyo at 8.30 every morning and arrive at Shimonoseki at 9.38 the following morning. They leave Shimonoseki at 7.10 p.m. each day and arrive at Tokyo at 8.25 p.m. the following day.

The seven cars of which the new trains consist comprise a mail and beggage car, second-class cars, a second class sleeping car, a dining car, a first-class passenger car, first-class sleeping car and observation car. Generally speaking the new express may be called Trains-de-Luxe, leaving nothing to be desired in point of appearance, equipment, and accommodation. The dining cars, and the observation cars are particularly noticeable, the former being far larger and more roomy than those hitherto used in Japan and the interior conspicuous for the thorough improvement effected in every detail that may add to the comfort and convenience of passengers. The observation cars are for the use of first class passengers only, and consist of three sections, namely compartments for passengers, the library, and the compartment for the purposes of observation. This last section is provided with upholstered wicker chairs and smoking tables, etc. With large clear window panes, on each side, the car gives a most satisfactory view of the country through which the train passes. The carved wood ceilings, the electric lamps in the shape of Japanese lanterns, and the paper-screen like ventilating windows—all these give the cars a peculiarly Japanese touch.

It may be added that each carriage of these new Expresses, of which there are five for

service at present, was constructed at cost of from Y. 10,000 to Y. 18,000.

Proposed Peking Tramway.—A foreign firm has arranged to advance the Chinese Government eight million marks in one year in return for a concession of the right to construct a tramway in Peking costing the same amount. It appears that a Chino-foreign company will be formed under the direction of prominent Chinese. It is understood that the Peking tramway scheme provides for the construction of lines outside Peking. A scheme for the construction of lines inside the city is under consideration.

Burma-Szechuen Line.—A resident of Yunnan gives the following as the reasons for the occupation of Pienma by the British. In an interview published by the "China Tribune" he is credited with saying: "Several years ago, Great Britain acquired the concession for the Yunnan-Burma Railway. But owing to the very difficult engineering work to be encountered on the section between Bhamo and Tengyueh via Nungchang on account of the extraordinary mountainous nature of ground, she was desirous to obtain a new line to reach Szechuan by crossing through Yunnan Province. With this in view she was exploring the border line to see if she could find any likely place from which she could stretch her projected line with less difficulties. She soon discovered that the construction of a railway from Michina, the northern terminus of the Burma Railroad to Pienma, could be carried out with comparative ease, and that it would prove to be far more advantageous on both financial and economic relations than the projected Tibet-Szechuan Railway, which is to be stretched across Tibet to Chengtu via Yatung. Thus situated, she took hold of demarcation question, but her real idea is to abandon the Yunnan-Burma Line, and start one from Michina to Pienma, and thence stretch it to the capital of Szechuan, via Yunnan Fu, or from Pienma directly to Chengtu Fu."

Baguio Line.—The work of the Manila Railway Company is being pushed on rapidly. Over 900 men are now employed at the Baguio end, from where more than six kilometers of grade have been completed towards Aringay, on the coast. At the Aringay end 1,200 men are working. Hydraulic streams from the Irosen river are being used to cut down the dirt grade, the power being supplied by little giant hydraulic pumps. The main tunnel of this line has already been driven 50 meters into the cliff. From Aringay toward San Fernando the road is nearly completed, in fact the trains are running through to the Bauen river, and from there a perfect automobile road is available to the latter town. The Bureau of Public Works is arranging to run an automobile line over this section, as soon as the railroad gets the first train to the river.

Light-Rail Over Tumenling Pass.—The construction of a light-rail line winding up and down Tumenling Pass on the Kirin-Changchun Railway is now ready for service. The rapid progress has been made possible by securing from Tientsin a gang of 200 skilled hands, in order to re-enforce the 600 regulars which have been put on since the plan of building the line was adopted last spring.

Proposal to Bridge Johore Strait.—The Federal Council (Malay States) has approved the appropriation of $12,000 to meet the cost of the borings and other preliminary investigations for the construction of the proposed bridge over the Johore Strait. The Chief Secretary said that the Government was not committed to such a project but it was worthy of consideration. He estimated that the cost would be about $3,800,000. The proposed bridge was a very necessary addition to the railway system of the Federated Malay States. At present there was much delay in bringing goods up from Singapore. If there was a bridge it would be possible for goods to be loaded at the docks in Singapore, and brought straight to the Federated Malay States. The total additional cost, including a diversion and raising of the line, would be $4,100,000.

Federated Malay States Lines.—The General Manager of the Federated Malay States Railways (Mr. P. A. Anthony) reports a highly satisfactory working of the railways during the past year. A striking feature was the great increase in the number of passengers carried—10,347,896, as compared with 7,262,830 in 1909, an increase of 42.47 per cent. in two years. Goods traffic increased from 653,663 tons in 1910 to 780,780 tons in 1911, or 19.4 per cent. of increase. These increases have taxed the capacity of the rolling stock to its utmost limits, and a large programme for additional stock will be necessary to enable the management to keep pace with the development of traffic. The gross earnings from all traffic increased by 20.28 per cent., working expenses by 4.3 per cent., and the net earnings by 45.9 per cent. The dividend earned was 6.03 per cent., being the highest since 1903. There is a total of 559 miles of line open to traffic, and with the Johore and Singapore lines there is now a total of about 700 miles of railway lines in the Malay Peninsula. This will be added to during the current year, as the extension of the line through Pahang is being pushed on in order to carry the system through the State of Kelantan to the Siamese frontier. The capital account of the open lines in the F.M.S. (inclusive of motor services) now stands at £6,383,217, an increase of £341,741 over the previous year. A portion of this was expended on the new passenger station at Kuala Lumpur, the capital of the Federation, where there is now a fine station hotel. New restaurant cars, fitted with electric lights and fans, were added to the rolling stock, as well as additional rolling stock for the night service to Singapore, night travel being a new feature in Malaya since the completion of the line through Johore. These sleeping saloons and dining cars will bear comparison with those in use on any other railway. The capital account of lines under construction and surveys amounted to £507,928 on Dec. 31, 1911, and though the major portion of this sum was expended on the Pahang-Kelantan extension it may be mentioned that a portion was spent on surveys of a route on the West Coast carrying a line from Province Wellesley into the State of Kedah. The gross earnings from all sources, including motor services, amounted to £823,513, or an increase of £138,854 over 1910; and the gross working expenses were £440,698, as against £422,500 in 1910.

Indian Railway Profits.—In the administration report on the railways of India for 1911, it is stated that during the year there were 755 miles of line opened to traffic, bringing the total open mileage up to 32,839 miles. There were also 841 miles of lines sanctioned, and at the end of the year 263.78 miles were under construction.

The actual capital outlay, excluding premia for the purchase of companies' lines from the commencement of operations on all open lines, amounted at the close of the calendar year 1911 to Rs. 45,006.80 lakhs and that on lines under construction to Rs. 955.48 lakhs. In addition, Rs. 130.12 lakhs were incurred on miscellaneous items, English stores, &c., connected with railways. The total outlay amounted to Rs. 46,092.40 lakhs. The actual expenditure on open line rolling stock and on other open line expenditure during the year 1911 amounted to 351 lakhs and 573 lakhs respectively.

The fullest details are gone into in the report, but a summary of the earnings, showing the financial result to the State during the year 1911, after meeting, in addition to the expenses of working, all charges for interest on capital outlay by the State and on capital raised by companies, also annuity payments connected with the purchase of railways by the State, was a net gain of Rs. 406.94 lakhs (£2·71 millions). This result, however, is arrived at after inclusion in the charges against revenue of a sum of Rs. 135.63 lakhs (£904,000), representing the portion of annuity payments in redemption of capital. Omitting this item, which is not properly a revenue charge, the true result for the year is a net gain of Rs. 543 lakhs (£3·62 millions). The gross earnings of all Indian Railways amounted in round figures to Rs. 5,527.92 lakhs, compared with Rs. 5,114.22 lakhs in 1910. The net earnings amounted to Rs. 2,644.00 lakhs, against Rs. 2,308.50 lakhs in 1910. These net earnings yielded a return on capital outlay of Rs. 45,006.80 lakhs on open lines—*i.e.*, on mileage earning—a revenue of 5.87 per cent., as compared with 5.46 last year.

Regarding passenger traffic, the total number carried was 389·85 millions, against 371·58 millions, and the earnings therefrom amounted to Rs. 1.849.08 lakhs, against Rs. 1,712.04 lakhs. The number of third-class passengers carried was more by 16·02 millions and the earnings therefrom by Rs. 107.99 lakhs. The increase of Rs. 137.04 lakhs in the passenger earnings was contributed chiefly by the North-Western Railway (Rs. 26.84 lakhs), the East Indian Railwap (Rs. 16.08 lakhs), the Great Indian Peninsula Railway (Rs. 12.35 lakhs), the Bombay, Baroda and Central India Railway (Rs. 10.03 lakhs), the Eastern Bengal Railway 3 ft. 3⅜ in. gauge section (Rs. 9.20 lakhs), the Oudh and Rohilkund Railway (Rs. 8.69 lakhs), and the Rajputana-Malwa Railway (Rs. 8.56 lakhs), and was due to the development of traffic and to the Coronation Durbar, held at Delhi.

The aggregate tonnage of goods moved during the year 1911 was 71.27 millions of tons and the earnings therefrom were Rs. 3,293.32 lakhs, an increase over the previous year of 5·67 million tons and of Rs. 250.15 lakhs in earnings. Of the increase in the goods receipts the East Indian Railway contributed Rs. 48.05 lakhs, or 10.21 per cent. and the North-Western Railway Rs. 36.69 lakhs, or 14.67 per cent., while remainder was contributed principally by the Bengal-Nagpur, the Great Indian Peninsula, the South Indian, the Bombay, Baroda and Central India, and the Rajputana-Malwa-Railways.

The number of passengers killed from causes beyond their own control was 0.03 per million of passengers travelling, which gives an average of one in 1,197.74 millions of miles travelled.

Shanghai Nanking Railway.—The half-year ending June, 1912, was a prosperous one. The earnings totalled $1,407,000, whilst the working expenses stood at $821,000, the net earnings thus being $586,000. For the 33 weeks ended August 17 the figures stood as follow:

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1912.....	1,456,434	235,119	1,691,555
1911.....	1,101,972	138,885	1,290,857
Increases..	354,462	96,234	400,698

Shanghai Tramway Returns.—The returns of the Shanghai Tramways (Foreign Settlement) for the week ended August 14 are as under:—

	1912.	1911.
	$	$
Effective receipts (after deducting loss by exchange)	16,242.29	11,933.55
Passengers carried	841,315	562,575
Car miles run	54,257	43,447

The loss by Exchange of subsidiary coinage for the week was equal to 24.09 per cent. of the gross cash collected on the cars as compared with 23.78 per cent. for the corresponding week last year.

EX PRESIDENT DR. SUN YAT-SEN
Appointed to Reorganize China's Railways

CHINA'S RAILWAY PROBLEMS

AN ANALYSIS OF DR. SUN YAT-SEN'S SCHEME ILLUSTRATING
CHINA'S DIFFICULTIES IN FUTURE RAILWAY EXTENSION
(BY GEO. BRONSON REA)

CLOSING THE DOOR IN YUNNAN; OPERATION OF THE FRENCH YUNNAN RAILWAY
THE RAPE OF MONGOLIA; RUSSIA'S RAILWAY POLICY IN CENTRAL ASIA

THE CANTON-HANKOW RAILWAY, KWANGTUNG SECTION
PHILIPPINE RAILWAYS: KOREAN RAILWAYS
TIENTSIN-PUKOW RAILWAY: THE KALGAN RAILWAY AND EXTENSION
THE LOAN SITUATION

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CHINA'S RAILWAY PROBLEMS

An Analysis of Dr. Sun Yat-sen's Scheme, Illustrating China's Difficulties in Future Railway Extensions

(BY GEO. BRONSON REA)

A Presidential Order of September 10 points out that "inasmuch as the development of the country rests chiefly on the introduction of means of rapid communication the construction and operation of railways are a national necessity," and appoints Dr. Sun Yat-sen "to consider and draft plans for a national system." The Mandate empowers him to submit whatever plans he may make to international financiers in order that the needed capital may be raised, and instructs him to finally tender the results to the Government for approval. Further, the President authorises Dr. Sun "to form and organise a Central Railway Corporation for the purpose of carrying out and effectuating the work hereby charged and entrusted to him."

This is something tangible, and places in the hands of Dr. Sun Yat-sen the most important work in the Republic. It, at the same time, vests him with a wide radius of action in the search for funds to equip China with the lines she needs to bring her even within measurable distance of adequate development. What method of procedure Dr. Sun will ultimately adopt to secure the best financial service has only been suggested, though Dr. Sun has not yet come to a final decision on the point. He is, and has been, however, besieged by all manner of men representing all manner of capital, and of them all he will be well advised to be wary. When he has arrived at the stage when a concrete and practical proposal may be placed before capitalists he will easily be able to find those who know most about the special business he has in hand, and likewise he will discover that they will be ready to listen to him. They will not only be able to tender him valuable advice on the subject now nearest his heart, but they will be able financially and technically to carry out any contract into which they may feel disposed to enter. There are numerous pitfalls on the financial highways and byways that must be guarded against, and Dr. Sun should be wise in time, study well the nature of the ground upon which he might be invited to tread, and keep a sharp and constant vigil for danger signals ahead

The outline of the scheme which Dr. Sun Yat-sen has in mind was first published in the FAR EASTERN REVIEW last July. Even yet no detailed plans have been devised. A work of such magnitude needs considerable prolonged study, and of late weeks Dr. Sun has had no leisure specially to devote to his hobby. The gastronomical battlefield of Peking has claimed most of his attention, but he has taken occasion by the hand to make post-prandial reference to the need of railways and on other occasions has delivered lengthy speeches on the generalities of his proposals. This is all to prepare the public mind. Even yet in China there is a great superstitious mass to contend against, and what is worse there is the agitating sections who have in the past used the alleged dangers of foreign loans for railways as the shibboleth to gain certain political ends. It is not at all unlikely that the slogan of the anti-everything party will now commence a series of geometric curves suggestive of the disconcerting habit of the far-famed boomerang and make a landing in an awkward place with an unpleasant thud. But that, of course, has to be considered part of the fortune, or misfortune, of war. To avoid being trapped in such a predicament Dr. Sun is gently breaking the news through the provinces, and it is hoped by him that his arguments of "railways for next to nothing" will entice the potential opponents to pocket their prejudices and permit the plans he has in view to be consummated.

His scheme, as has already been pointed out in this journal, consists of a series of trunk lines and inter-provincial connections. The southern trunk line extends from Shanghai to Canton through Kwangsi, Kweichow and Yunnan to Tibet and beyond to Tienshan. The central trunk likewise commences from Shanghai and traverses the provinces of Kiangsu, Anhui, Honan, Shensi, Kansu, and Hsinchiang, and extends to Ili, whilst the northern trunk starts at Chingwangtao and passes through Manchuria to Outer Mongolia, and on to Kobdo. The National Railway Union of China has a somewhat different idea, though it agrees with Dr. Sun's southern trunk line. It wants to see the shortest connections with Europe, and proposes that the central line should run from Kiangpei, northwestward through Kaifeng, Hsian, Lanchow, the southern slope of Tienshan to Kashgar, with ultimate extension to connect with the Pamirs, Kashmir, Persia, Asia-Minor and Constantinople, whilst the northern trunk should run from Peking through Sui-yuan, Uliasutai, Kobdo connecting with the trans-Siberian line at Tomsk.

During his sojourn in Peking Dr. Sun has certainly preached the gospel of the iron horse with vigorous consistency, and no opportunity has been allowed to slip which could be utilised to drive a wedge calculated to have some effect in splitting up the superstitions and the prejudices of the provincials. To the members of the Peking Press Association, which embraces the editors of all the forty or more papers of the capital, he explained that the Government must have foreign money, and that whilst evil consequences were experienced by the Manchu administration as a result of borrowing foreign money, they were due to wrong and careless negotiation rather than to the foreign loan as such. And he asked what line in China was not built with foreign money—stifling what might have been the jubilant retort: The Kalgan line! by adding that the money with which the Peking-Kalgan line was constructed was profit from the Peking-Mukden line, "and hence was still a loan borrowed indirectly, and not purely Chinese money." Then he suggested that he would get over the errors made in the past when security such as likin returns, custom duties, *et hoc*, was given for railway loans, by contracting a foreign loan of $6,000,000,000 and taking only one-fifth of the sum in hard silver and the balance in railway material, a proposal which, he believed, would commend itself to the bankers.

In ten years he hopes to have 200,000 li of railways built. During the first two years the loan would be negotiated, the

next three would be devoted to the perfection of the survey of the lines, and the end of the following five years would see the completion of the series. Chinese workmen to the number of 2,000,000 could be employed to effect that desideratum. At the meeting of the Railway Union he worked that point out for the benefit of his hearers. "Supposing that ten men can," he said, "in one year, build one li of railway, 200,000 men should be able to build 20,000 li in a year, and 2,000,000 men 200,000 li. Cannot," he asked, "we find among our 400,000,000 people 2,000,000 men to build our railways?" It may not, he added, be easy to organise one company to undertake that tremendous programme, but they could organise several companies. To convince his hearers he described how America prospered in railway enterprises. "The railways in the United States bring in every year," he declared, "a net interest of $1,500,000,000 (silver) and within ten years repay the invested capital. With a population of 400,000,000, and an area of 2,500,000 square miles awaiting railways for colonization and development, China's future railway returns should be proportionately greater, or four times more than those of America."

But the strongest appeal of the ex-President to the people for co-operation was made on other grounds. He appealed to their patriotism, dilated upon railways as a necessity in self-defence, and enlarged on their influence upon political development and the spread of civilisation. "The aggressive policy of Russia in Northern Manchuria and in Mongolia, the freedom of action of Japan in Southern Manchuria, and the monopoly by Great Britain of influence and authority in Tibet, are all," he said, "a challenge to our military prowess in defending our frontiers." And generally he emphasised his wish for popular confidence in words similar to the following, which are quoted from his speech to the Press Asociation. "The construction of railways in China to-day is a question of imperative necessity, and one of life and death to the Republic. The chief authority under a popular government rests with the people. It is their approval or non-approval that settles and decides everything of importance. If my scheme be favourably received by the people in general, I shall try to push it to a successful conclusion within ten years. You are representatives of the public opinion, and I hope that you will use every means within your power to enlighten them on the necessity and benefits of railways so that the scheme which I have carefully explained to you will, by their support, become a reality."

The issue of the Presidential Mandate referred to at the outset of this article is the first practical step, and now it is upon the shoulders of the ex-President to evolve a scheme which will be acceptable to foreign financiers, and make arrangements with them which will be acceptable to the members of the National Council at Peking, and the rights-loving people of the various provinces. Dr. Sun has a big task ahead of him; and at least in the suppression of popular distrust of foreign influence through its financia' investments no man could equal him. Once he has the popular will on his side the rest should be easy, if he adheres strictly to the practical.

One of the most important items is the estimated cost of the lines. For rough calculation the Chinese li (1,458 English feet) may be taken as one third of a mile. Dr. Sun's scheme, 200,000 li is about 67,000 miles in round numbers, and his estimated cost is $6,000,000,000 silver, or roughly $3,000,000,000 gold. This gives an average cost of $30,000 silver per li, or $90,000 silver ($45,000 gold) per mile. The cost of loan built railways in China has generally exceeded this figure, while less pretensious lines constructed under native management has been much lower. Eliminating many of the expenses attached to the ordinary Chinese railway loan, a fair average estimate of the cost of building and equipping a mile of standard guage railway in China, is exactly the figure quoted by Dr. Sun. Some lines across level country might be built cheaper, and some of the mountain sections at a cost much higher. If China had her own engineers with the experience of Jeme Tien-yu, Yen Te-Ching, K. W. Kwong, K. S. Loh and others, enabling her to dispense entirely with the service of foreigners, the lines could be constructed at an average of $30,000 gold per mile. The world's great construction firms like, J. G. White & Co., Pearsons' or Paulings', with their experience in Asiatic railway construction would undoubtedly be glad to contract at an average price of $40,000 gold per mile for the construction of a complete system. So it may be accepted that Dr. Sun's estimate as a basis for loan or construction negotiations is a sound one.

The plan as outlined is so extensive and comprises so many features conflicting with other interests, that even partial success can only be secured through the exercise of the most careful diplomacy and financial shrewdness. The construction of new railways in China, is the most difficult problem confronting the new government. It was so under the old regime, and the revolution has not altered conditions to any great extent. It was the rock on which the old ship of state was wrecked, and unless a safer course is steered in the future, the new bark will also be swept by the currents straight for the reefs and be split asunder without warning.

The policy of foreign powers in China finds expression in the history of her railway development, and the construction of any new railway conflicting or competing with their existing lines and future schemes, has met in the past with firm opposition. It is not safe for China to construct railways in certain sections of her vast territory. As long as her officials content themselves with dreams, and no attempt is actively undertaken to put into practice the schemes for constructing such lines, the interested foreign Powers preserve silence and refrain from interference. The past is a safe guide for the future, and we know that when certain railway projects assume tangible form, and loan negotiations for their construction are opened with some hope of a successful issue, the polite cloak of diplomacy is discarded, and China is warned in no uncertain terms, what will happen if the scheme is not abandoned.

The construction of other lines are hampered by the existence of treaties, concessions, understandings, and loan contracts to such an extent that a thorough and intimate knowledge of the many delicate points involved is essential to avoid a clash with foreign commercial interests through their respective legations. In addition to the perplexities arising from the collision with foreign political and commercial interests, there remains the extremely disagreeable and dangerous task, to the Chinese official at least, of finding an amicable and equitable solution to the conflict between the Central and Provincial governments. The astute officials of the old regime repeatedly shirked this problem, and one by one, Presidents of the old Railway Board, quietly quit their lucrative post rather than incur the certain hostility of the Provinces, by an attempt to infringe on their rights. It remained for Sheng Kung-pao the last Minister of Railways under the Manchus to put into effect the Railway Nationalization scheme. The revolution was precipitated. To appease the wrath, of the provinces, the Central Government offered up Sheng as a sacrifice. He was cashiered and anathematized in Imperial Edicts, and barely escaped with his life to Japan.

The country has been so occupied with other important matters since the revolution, that the great question involving the relation of the Provinces to the Central Government has been temporarily shelved. Before any great railway scheme can be safely put into practice, this matter must be settled to the satisfaction of both sides and incorporated in the new constitution, otherwise there will be a continuous conflict between the Central and Provincial authorities concerning the construction and regulation of the railways. Dr. Sun has the confidence of the Southern Provinces, and there is little doubt but that he could secure their adhesion to and permission for any scheme he might originate. It is doubtful however if any other man in China could reconcile the various elements, and if sickness or death intervened to terminate Dr. Sun's connection with the great plan, is there another man who embodies his qualities and could take up his great work and carry it through?

Dr. Sun's scheme as reported embraces three new trunk lines, North, South, and Central, in addition to many branches or feeders connecting the smaller cities with the proposed and existing systems. In the execution of this scheme there are powerful foreign and domestic political influences to overcome, existing railway rights to adjudicate upon, intricate financial problems and terms to determine, and stupendous engineering obstacles

to surmount. By a careful analysis of these opposing influences, we can arrive by a process of elimination at a fair appreciation of the value of Dr. Sun's scheme and its chances of success.

Dr. Sun's plan includes the construction of a northern line commencing at Chinwangtao, round Liaotung into Inner and Outer Mongolia to Uranhai In other words the Northern system is to be constructed in opposition to the rights either acquired or otherwise arrogated to themselves by Russia and Japan. The Peking agreement of December 22nd, 1905 entered into between China and Japan contained a secret clause which bound China, not to construct, prior to the recovery of the South Manchurian Railway any main line in the neighbourhood of and parallel to that railway, or any branch line which might be prejudicial to its interests. This self denying clause, in which China in effect surrendered her sovereign rights to construct railways in Manchuria, was made public and successfully invoked by the Japanese Government to obstruct and cause the abandonment of the projected Fakumen Railway, a branch line of the Northern Railways from Hsinminfu to the market town of Fakumen. China had entered into a signed agreement with a British financial corporation to supply the funds and contracted with a British construction firm to build the line. China's undoubted intention was to test the strength of the secret agreement referred to, and if Japan acknowledged her right to build the Fakumen extension, the line was to be carried on northwards towards Changchun.

Japan's railways already connect up the main commercial centers of South Manchuria and with the completion of the Chino-Japanese Kirin-Changchun line, and its prolongation to the coast at Hunchun by Japan, there is little scope for further commercial lines in this province. It is true that China could and would be allowed by Japan to construct a few insignificant local feeders to the South Manchurian system, but these would have no bearing on the general scheme, nor be of sufficient importance to merit the consideration of foreign capitalists.

Dr. Sun's schemes provide for the extension of the Kirin Changchun line, northeastwards to Ninguta, with a line from this point southeast to Hunchun, and also for a branch line from Kirin extending southwards to the Chentao district on the Yalu.

Section b, Clause 3 of the Convention between Japan and China regarding the Hsinmin-Mukden and the Kirin-Changchun Railways signed at Peking April 15, 1907 provides as follows:—

"*If the Kirin-Changchun line should hereafter build branch lines or an extension, the construction of such lines shall rest of right with the Chinese Government, but, if there shall be a lack of capital, application should be made to the South Manchurian Railway Company for an arrangement. Should China, however, appropriate funds herself for the construction of any other railway lines than these mentioned, it shall not concern the South Manchurian Railway Co.*"

The Manchurian Agreement of September 4th, 1909 furthermore provided as follows:—

"*The Government of China shall undertake to extend the Kirin-Changchun Railway to the southern boundary of Yenchi, and to connect it at Hoiryong with a Korean Railway, and such extension shall be effected upon the same terms as the Kirin-Changchun Railway. The date of commencing the work of proposed extension shall be determined by the Government of China, considering the actual requirements of the situation and upon consultation with the Government of Japan.*"

In view of the immense strategic importance attached to these railway projects, Japan would never consent to forego her undisputed rights to finance and construct them. Dr. Sun's idea of extending the Kirin Railway to Ninguta, and building a branch from there to Hunchun, reopens the delicate question of Russian and Japanese rights in Manchuria. The extension according to treaty must be financed by Japan and as it cuts the Russian Chinese Eastern Railway half way between Harbin and Vladivostok, the Russian Government would immediately protest against this danger to her strategic position.

As to Northern Manchuria, Russia has prohibited China in the most emphatic terms from constructing railways which might be considered a menace to her strategical position or as likely to compete with the Chinese Eastern Railway. In seeking to circumvent the self-denying clause of the secret protocol to the Peking Agreement and ascertain the exact position of Russia and Japan in regard to Manchuria, China contracted with an American syndicate to furnish the funds to build a line traversing Manchuria north and south, and arranged with a British concern to construct the line at a fixed rate per mile. This was known as the Chinchow-Aigun Railway project. The official communications from the Russian Minister at Peking to the Waiwupu, bearing the dates of February 4th and March 4th, 1910 express in no uncertain terms Russia's position. The result of this attempt to exercise her sovereign rights within her own territory created an issue in which China's right to decide upon the course of railway construction in Manchuria and Mongolia was denied by Japan and Russia, this principle receiving the moral support of their allies, Britain and France.

In the official memorandum of M. Korostovetz, the Russian Minister, to the Waiwupu bearing the date of March 4th 1910, he proposed as an alternative scheme, the construction by foreign capitalists, of the Trans-Mongolian line, from Kalgan to Kiakhta but stipulated that the section from Kiakhta to Urga should be reserved to Russia. Conditions have materially altered in two years and now we find an independent Mongolia, recognized and protected by Russia, with the latter Power already negotiating with French financiers for the construction of railway lines within the new independent state, under a Russian guarantee as to the interest on the construction loan. In his speech before the Press Association at Peking, Dr. Sun referring to Russia's reported activity in the matter of the Kalgan Kiakhta line with French capitalists asked the question. "When this scheme is laid before us shall we agree to it or refuse it?" "On the other hand, if we at once start to prepare to construct the line ourselves, we shall be able not only to check the Russian aggression, but also to secure the same French capital for our own use." Bearing in mind Russia's attitude in the Chinchow-Aigun railway matter, and her actions of the last few months in regard to Mongolia, it seems hardly likely that China's wishes will be consulted at this time, and when Russia decides to build the line, it will be too late for China in her weak and disorganized condition to do more than protest. Dr. Sun's plan is to finance such lines as the Kalgan-Kiakhta by foreign capital, and he hopes to forstall Russia, by entering at once into financial negotiations to build this line, expressing the hope that the same French capital can be secured.

Dr. Sun is an optimist and has an overwhelming faith in the ultimate triumph of those principles of justice that, unfortunately have no existence in the world politics of to-day, especially where the interests of his country are concerned. That Dr. Sun can retain his trust in human altruism is eminently creditable to him as a man, but renders him liable to be mistaken in his interpretation of existing facts.

If Russia as reported, is negotiating with a financial syndicate, and especially if it be French, and stands ready to guarantee the interest on the cost of constructing railways in Mongolia, it implies that Russia has already decided to annex the territory, and will brook no interference with her plans. It also signifies that she has the firm support of France, her financial backer and ally. If Dr. Sun believes that a French political loan with the Russian government guarantee can be diverted to the uses of China, in her present financial straits and unrecognized status and employed in frustrating the uses for which it was intended, then he has failed to grasp the full significance of recent political events affecting the future of China. It may be safely assumed then, that future railway construction in North and South Manchuria, will be undertaken only by or with the consent of Russia and Japan, and China will be excluded from any participation in the development of these provinces.

The same Powers are now engaged in extending their policy of "peaceful penetration" into Inner and Outer Mongolia, and the time cannot be far distant, when notice will be served on China, that any effort on her part to restore her authority over these dependencies will be considered as an unfriendly act or words to that effect. So we may eliminate Outer Mongolia at least, as a field for the extension of Chinese railways in the immediate future.

Two or three years ago, when Russia's railway program in Central Asia was being discussed by the Duma, the Chinese

Government awoke from its slumber, and took sufficient notice to authorize the Railway Board to make a survey and report on certain lines in Mongolia to counteract the Russian menace, and then yawned and slid back into the sleep of centuries. The FAR EASTERN REVIEW at that time fully described the gravity of the situation. That was China's opportunity. She let it slip. Through it she has lost Mongolia.

Any comprehensive scheme for a national system of Chinese railways, must have for its objective the development of the country on a broad scale to facilitate transportation of crops and products to the nearest seaport for exportation. Railways must have some outlet to the sea, and open ports are essential to the development of the country and profitable operation of the railways. In the elaboration of any comprehensive railway scheme, it is natural to suppose that the Chinese government will make some provision to build up a port entirely within its own jurisdiction, and under its exclusive control. It is inconceivable to suppose that China would contract enormous loans for the furtherance of any policy tending to strengthen and enrich the foreign interests holding the keys to her interior through the possession of the best harbours on her Coast. This is a most important and vital question, and before we follow Dr. Sun's scheme any further, an elucidation of the situation involved is necessary to a better understanding of what China has to contend against. The question of the control of open ports under her own jurisdiction is of such paramount importance to China's future progress, that all railway projects must perforce be co-related to it. China has been despoiled of her most valuable deep water harbours. Dalny and Port Arthur in the North are under lease to Japan, Kiaochow to Germany, Wei-hai-wei to Britain, Shanghai is under an International Council, Hongkong has been ceded to Britain, and France holds Kwangchow Bay.

Two years ago when the scheme for constructing the Central trunk line was seriously considered by China, the question of a suitable port under her own jurisdiction, located on the eastern coast, became of prime importance to the success of the project. The little unknown port of Haichow, was selected as the only spot on the coast, which could be developed as the terminus of the line to Kaifeng and beyond. The situation then created was set forth in an article entitled "Railway Strategy in China" appearing in the June 1910 issue of The FAR EASTERN REVIEW. As conditions have not changed we reproduce herewith that part of the article which serves to illustrate our point:—

"It is a significant fact that China has been deprived of all the valuable ports situated on the northern stretch of her coast. Shanghai, the great commercial center of the Empire, is ruled by an International Council, and the Central Government has no control over its affairs. Tsingtau is held by Germany, Weihaiwei by Great Britain, Dairen and Port Arthur by Japan; this leaves to China the outlets at Newchwang, Tientsin and Chefoo. Newchwang as a port is worthless. Eighty years ago the spot on which Yinkow now stands was at the bottom of the sea, and it is now twenty miles inland from the mouth of the Liao River. The encroachment of the land on the Liao-Gulf is going on so rapidly that any port at the mouth of a river can never be depended on as a permanent outlet for trade. In addition, the Liao River at Newchwang is frozen over for at least four months of the year, and all commerce is checked until the thaw, and then only shallow draft coasting vessels can reach the town.

Chinwangtao is an artificial ice free port owned and operated by the Chinese Engineering & Mining Company. Tientsin which ought to be the great port for North China is handicapped by the same disadvantage as Newchwang, and any scheme of improvement embracing a large expenditure is only a waste of money. The silt carried down by the Haiho is so great that constant dredging is necessary to keep a channel open for light draft steamers. Large vessels have to lie off shore as far as nine to ten miles, so Tientsin as a port can never figure in any important scheme for the development of the Empire, or the advancement of a national policy.

There remains Chefoo which might be made a great Chinese port, but while the depth of water is ample, the harbour is open to the heavy northern gales, and a breakwater is imperative to make it safe for vessels during the winter season. But at the best, even after a large expenditure of money on improvement schemes, the harbour of Chefoo could only accommodate a very limited number of vessels. Chefoo's prominence as a port has rapidly declined since the opening of Tsingtau and the construction of the Shantung Railway. The trade of the province, which once flowed through Chefoo, has been diverted to Tsingtau, and the only hope of the port is the building of a railway which will terminate at some point on the existing Shantung Railway. It is quite clear that such a road might menace the prosperity of Tsingtau, and diminish the through traffic of the German line, and as it conflicts with German interests, must meet with their disapproval. Chinese promoters have several times endeavored to raise the funds to construct this line from Chefoo to Wei-hsien, but up to date have been unsuccessful. Under the terms of the Kiaochow Convention, if the Chinese desire foreign capital to develop the province, they must turn to Germany, and in view of the menace to her own interests, it is quite natural that she would withhold financial assistance to such a scheme. While the Chinese are free to apply elsewhere for aid in the event of German refusal, such action on their part would undoubtedly result in complications. At all events, Chefoo could never enter into any plan of the Chinese Government of building up a port under its own control, for as long as the Kiaochow Convention holds good, the proposed railway line will only have a local importance, and would be useless to China in the advancement of any broad national policy for the development of the Empire.

Weihaiwei, leased to Great Britain, has no future as a trade port. So it is quite clear that China is at present deprived of the only really good harbour on the Northern coast through which she could divert the great trade of the Central provinces. Japan holds the best harbours for the outlet of Manchurian trade, and Germany occupies the port of Tsingtau, commanding the desirable trade routes from the sea to the great central provinces. If foreign railway programs are permitted full scope to develop, the logical sequence is that China will be for ever barred from controlling a suitable deep water base for the furtherance of her own policy.

Some months ago, it was reported that the Chinese Government had opened the port of Haichow, a hitherto insignificant harbor on the north-eastern coast of Kiangsu Province just south of the Shantung border. This report, however, lacks official confirmation. The reason for such a step is now made clear by the imperial sanction to a scheme for building a railway from Kaifengfu, through Suchowfu, Tsingkingfu and thence to Haichow.

Since the above was written, the Yangtsze port of Pukow, has assumed considerable importance as the southern terminus of the Tientsin-Pukow Railway. The Yangtsze river is navigable for ocean steamers, and the necessary wharves and terminal facilities could be economically constructed to enable the port to handle the large import and export traffic from those sections of China not within the influence of Tsingtau. Haichow could only be developed at a large expenditure, and artificial protection would have to be provided against the heavy northerly and easterly gales. For strategic and commercial reasons therefore, it would seem that the only port open to China in the north as the outlet for any large system of state owned railways, and one that would remain under her undisputed control, is that of Pukow on the Yangtsze.

To the south of Shanghai the ports of Foochow, Amoy and Swatow remain under the jurisdiction of China. The fact that China has retained jurisdiction over these is sufficient evidence of their strategic worthlessness. These ports may serve as the terminii of local railway lines tapping the adjacent hinterland, but as far as foreign trade is concerned they will always be subsidiary to Hongkong or Shanghai. Hongkong's position commanding the approaches to Canton, coupled with her natural advantages as the only deep water port south of Shanghai gives her control of the entire trade of that part of China, and the Colonial Government has burdened itself with a large debt to insure the commercial supremacy of the port, by the construction of the Kowloon-Canton Railway at a cost of nearly £50,000 per mile. Any elaborate scheme for the construction of railways radiating from Canton, must necessarily strengthen this position. To offset these advantages China could improve the approaches to the West River, dredge the channel, and develop a deep water port of her own at Whampoa. And this must be done, unless she is willing to burden herself with a heavy debt for the glorification of Hongkong. We understand that Dr. Sun has given this phase of the problem serious consideration and his plans contemplate certain improvements that will free Canton from her dependency on Hongkong. The question then naturally arises, will the powerful British financial interests support a scheme of this nature tending to diminish their national commercial supremacy in South China? And yet a Southern port under China's jurisdiction is essential to the successful development of her railways. Otherwise the trade of Yunnan will flow out to the sea through French territory at Haiphong, and the vast commerce resulting from the proposed new trunk lines will be diverted through Britain's vantage point at Hongkong.

With the above exposition of the relation between port terminals and railways in China we may now turn once more with a clearer understanding to Dr. Sun's schemes and analyze the railway situation in the metropolitan province of Chihli. On the 10th of October, 1898, the Chinese Government entered into a loan contract with the British and Chinese Corporation Ltd, to advance £2,300,000 on the security of the then Peking-Newchwang Railway. The terms and provisions of this agreement are such that to a certain extent, it gives

British interests the right to dictate China's railway program in Chihli for a period of forty-five years. Clause 3 of this document reads:—

"*Should it be decided hereafter to construct branch lines or extensions connecting with the lines herein named, their construction shall be undertaken by the Railway Administration, and should the funds of the Railway Administration be insufficient for that purpose, it shall apply to the Corporation for the same.*"

When the management of the Northern Railways was restored to China in 1912, an additional agreement was entered into with the British authorities which amplified and defined the original contract. Article 5 of this Supplementary Agreement reads:—

"*Under Clause 3 of the Agreement dated October 10th, 1898, it is stipulated that the construction of branch lines or extensions shall be undertaken by the Northern Railway Administration, and the intent of this stipulation is hereby confirmed in order to secure the existing interests of the railways. It is therefore agreed that the construction of any new railway within a distance of eighty miles of any portion of the existing lines, for which concessions have not been signed previous to the date of this Agreement shall be undertaken by the Administrators-General of the Imperial Northern Railways.*

Such lines as the following:—

A northern line from Peking or Fengtai to the Great Wall;

A chord line from Tungchow to Kuyeh or Tongshan;

A line from Tientsin to Paoting Fu;

shall not in view of the interest of the Imperial Northern Railways be allowed to fall into other hands."

In other words these two clauses permit the Administration of the Northern Railway to construct extensions to the existing lines, out of the surplus of the Railway, but if these should be insufficient and a foreign loan becomes necessary, China is bound to apply to the British and Chinese Corporation for the funds. The Peking-Kalgan railway has since been built under these conditions, but the chord line from Peking (Tungchow) to Tangshan which would lessen the distance from the capital to the winter port of Chinwangtao and Manchuria, and the line from Paotingfu to Tientsin has never passed the paper stage. Both of these projects are approximately 90 miles long, and their construction would satisfy the railway demands of Northern Chihli for years to come.

A line from Peking or some point on the Kalgan Railway to Chengtehfu (Jehol) the capital of Inner Mongolia, a distance of about 100 miles, received serious consideration from the Manchu authorities in late years. Jehol has no trade to speak of. Its importance arises from the fact that an Imperial Palace used as a pleasure retreat for the Manchu Emperors and court is there located. With the downfall of the Manchus, Jehol loses much of its prominence. Any railway connection with this section of the country must have its outlet at some point within the sphere of influence covered by the British and Chinese Corporation agreements. China can only build these lines with her own money, and if foreign funds are required the British Corporation controls the undisputed right to advance them.

The natural outlet for Inner Mongolia (or Northern Chihli) follows the course of its rivers in an easterly direction, thus tending to direct the flow of trade into the territory served by the South Manchurian Railway. Signs are not wanting that if Mongolia becomes irretrievably lost to China, Japan is to receive as her share that part to the North of the Great Wall, comprised wi hin the provincial jurisdiction of Chihli, and known as Inner Mongolia. It is significant that Dr. Sun's Northern trunk system originates at the little open port of Chinwangtao the property of a British corporation, situated just within the Great Wall, and from there strikes northwest into the heart of Mongolia. This is undoubtedly a safer scheme at the present time than adhering to the old plan of constructing a new port at Lienshan (Hulutao) and starting a railway from Chinchow, to tap the districts of Inner Mongolia. Japan can offer no objection to such a scheme, and the British government must support a British loan for the construction of at least 80 miles of the line inland from Chinwangtao. If Dr. Sun loses no time in opening negotiations for a loan to construct a line swinging around the larger market towns of Inner Mongolia and terminating at Kalgan, he may hope for success, and consolidate for all time China's hold on this threatened section of her territory. The line may not pay its interest charges for years, and must be classed as a political or strategic road, but as the country is developed it will prove as profitable as any other line in China.

Such a line would shorten the distance by over 100 miles between Kalgan and the sea, and in connection with the enlargement of the port and terminal facilities of Chinwangtao would reduce the heavy charges on the freight and export products of Mongolia which now flows through the warehouses of Tientsin preliminary to shipment abroad. The acquisition of the port of Chinwangtao by the Chinese Government, would obviate the large expenditure on the Lienshan or Hulutao projected harbour works and insure a safe base for her northern system of railways, free from any possible political interference for years to come.

The extension of the existing Kalgan railway through Northern Chihli to Tatungfu and thence northwest to the great frontier mart of Kweihuacheng, has been surveyed and is now under construction with the funds furnished by the surplus earnings of the Northern Railway. Unless Russia recedes from her position as regards Mongolia this is the present limit of possible railway construction by China in Northern Chihli.

Just south of Chengtingfu on the Peking-Hankow trunk line, the Cheng-tai Railway branches off to the west, terminating at Taiyuanfu, the provincial capital of Shansi. This line was constructed under a loan agreement entered into in 1903 with the Russo-Chinese Bank. It was a commercial undertaking in which the Russian Government was apparently not concerned. The Russian Bank acted as the agents of the French Group or section of the Bank, who were entrusted with the construction and operation of the line. Belgian capital was also largely interested in the combination.

In the terms of the loan agreement appears a clause as follows:

5. "*During the whole 30 years or-and while the loan is unredeemed, the high authorities of Shansi shall, at the request of the Company, interdict the construction of another railway or other mechanical means of transport between Liu-lin, Chengting and Taiyuan-fu, as such would be detrimental to the interests of this railway.*"

The Memorandum on French Railway and Mining Concessions secured by France and French Companies in China discloses that the Chengtai Railway concession contemplated the extension of the line to the southwest, implying the existence of some additional or secret understanding not specified in the agreement. These claims were subsequently brought to the notice of the Chinese Government after the completion of the line to Taiyuanfu in a despatch from the Belgian Minister, revealing the fact that Sheng Kung-pao had promised the French Company in 1904 that an extension of the line from Taiyuanfu to Sianfu and a short branch to Ping-ting-chow would also be constructed with their capital. The Belgian Minister desired to inform the Chinese Government that the Company was quite willing to conclude the agreement in fulfillment of that promise. As there was no official record of this arrangement on file at the Waiwupu, the matter was referred to H.E. Sheng for confirmation. And there it has rested.

There are good reasons to believe that the Belgian and French claims had some basis in fact, or they would not have been advanced. Sheng Kung-pao had full authority in railway matters at that time, and his promise was binding on the Government. Therefore as a matter of equity, if foreign funds are secured for the extension of the Chengtai Railway beyond Taiyuanfu, China is bound to apply first to the Russo-Franco-Belgo Group. The only alternative lies in constructing the line with native capital, and this way out of the tangle has found effect in the organization of a Shansi provincial concern called the Tungpu Railway Company, for the purpose of building and operating a railway from Tatungfu in the North to Puchow in the Southwest corner of the province. This line would connect with the Kalgan extension

at Tatung, with the Chengtai line at Taiyuan, and with the projected Lotung section of the Central trunk system at Tungkwan. The company has called in the first installment on its shares, and at the outbreak of the revolution was engaged in ordering rails, bridges and rolling stock. It is doubtful, however, if the province can ever raise the $20,000,000 gold necessary to construct the 450 miles of line. A section or two may be built and then the funds will peter out and an effort made to contract a loan with some syndicate other than the one having the first option. The Chengtai railway is meter guage and can have no relation to the broad guage system proposed for the rest of the country. So here we find another hard nut for Dr. Sun to crack in building lines through Shansi.

The section of China lying between the provinces of Chihli and the Yangtsze River, comprises more delicate railway questions than all the rest of the country combined and the struggle for control by antagonistic foreign interests through the exploitation of railways has been constant and bitter.

The province of Shantung in which is situated the fine town and protected harbour of Tsingtau, is the natural outlet for the trade of Southern Chihli, Honan, Shansi, Kansu and beyond. The possession of the one good harbour on the coast north of Shanghai, should make Tsingtau the great distributing center and railway terminal of North China.

But Tsingtao is leased to Germany, who has in addition prefential rights on all railway and development schemes in the province of Shantung. The agreement between China and Germany in regard to Railway and Mining concessions in Shantung contains the following clauses:—

1. The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinan-fu to the boundary of Shantung province via Wei-hsien, Tsinchow, Pashan, Tsechuen, and Suiping. The second line will connect Kiaochow with Chinchow whence an extension will be constructed to Tsinan through Laiwuhsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinan-fu to the provincial boundary shall take in en route is to be determined hereafter."

"If at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese Government, or whatever Chinese may be interested in such schemes, shall, in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other Power are approached. Should German capitalists or manufacturers decline to take up the business, the Chinese shall then be at liberty to obtain money and materials from sources of other nationality than German."

The construction of the railway from Tsingtao to the provincial capital at Tsinanfu, was the direct outcome of the above concession. On its completion, Germany settled down to a fixed program to derive the full pecuniary advantages of her monopoly. The splendid harbor of Kiaochow had been converted into a first class naval station with a floating dock and repair shops, and the model German city of Tsingtau—the gem of the Orient—was laid out and built up on scientific lines. A system of covered wharves, alongside of which the largest mail steamers could warp, were constructed as freight terminals for the railway, and every energy was then expended to attract commerce to the new free port. It soon became apparent that the poverty stricken province of Shantung, would never justify in trade returns the heavy expenditures on Tsingtau, unless the railway could be extended westward to tap the richer sections of the hinterland. To all overtures for such a concession, the Chinese Government turned a deaf ear.

In 1897, a year previous to Germany's lease of Kiaochow, a Chinese merchant was granted the right to construct a railway from Tientsin to Chinkiang, and concluded a loan for this purpose with an Anglo-American syndicate in August of the following year. The acquisition by Germany of preferential rights in Shantung earlier in the same year, precluded the passage of such a line through this province, and the difficulty of finding another route caused the abandonment of the scheme. Germany finally secured the concession for building the northern half of this line, and British interests the southern section. In permitting Germany to build that portion of the line within the province of Chihli, or from Tientsin say to Tehchow, a distance of about 90 miles, the British and Chinese Corporation relinquished their rights obtained under the loan contract with the Northern Railways and allowing Germany thereby to gain an entrance into Tientsin and North China, and divert the trade of that section towards Tsinanfu and over the rails of the Shantung railway to Tsingtao. When Tientsin is closed by ice during the winter months, the export trade of North China is paralyzed, with the exception of the small volume which finds its way out of the harbor of Chinwangtao. A glance at the map will show that much of the trade now enjoyed by Tientsin, could be diverted to Tsingtao with considerable advantage to a vast section of North China, and consequent profit to Germany. The construction of any line or lines connecting the Northern or German section of the Tientsin-Pukow with the Peking-Hankow Railway, would create a revolution in the old established channels of trade, and instead of flowing northwards to Peking and then down again to Tientsin the products of Southern Chihli, Shansi, Shensi, and Honan would follow the shortest and most direct route to the sea, over the German lines to Tsingtao. German diplomacy has been keenly alive to this fact, and the German Minister has on several occasions approached the Chinese Government to secure a concession to construct a line to connect Chengtingfu with Techow and Kaifeng with Yenchow. According to Mr. P. C. Kent, in his valuable book on "Railway Enterprise in China" the German Minister has only succeeded in arriving at an understanding with the Chinese Government to the effect that in the event of the Chinese Government deciding upon the construction of these lines and requiring the assistance of foreign capital, German capitalists will be allowed the first refusal of the concession. "A glance at the map is sufficient to indicate the commercial importance of these railways to Shantung and Tsingtao." Their construction would give Germany a through rail connection to Taiyuanfu and beyond, dominating the carrying trade of Shansi, and the Yenchow-Kaifeng connection would place the Kaifeng-Honan (Pienlo) Railway and the proposed central trunk line tributary to Tsingtao and permit this port to compete with Hankow for the Yangtsze Valley trade.

With the thoroughness characterizing her foreign trade policy, Germany has carefully protected and insured her position in Shantung, and as the construction of these lines will ultimately become imperative for the development of China, she may well afford to bide her time with the calm assurance that her plans will mature. Her position is further safeguarded by the terms of the Tientsin-Pukow Loan Agreement, Clause 19 of which reads:—

19.—Branch lines in connection with the railway line mentioned in this Agreement may be built by the Imperial Chinese Government with funds at their disposal from Chinese sources, if thought advisable, and if foreign capital is required preference will be given to the Syndicate."

The above terms in connection with the understanding arrived at between the Chinese Government and the German Minister once more attests to the impregnable position of Germany. On one hand, if foreign money is used to construct these lines China must give the refusal to German financiers, and on the other, any branch lines or extensions to the Tientsin-Pukow line, must be the subject of negotiations with the German syndicate. As Baron von Bulow aptly stated, "Germany has secured in Kiaochow a strategical and political position which assures us a decisive influence on the future of the Far East. From this strong position we can look with complacency on the development of affairs. We have such a large sphere of action and such important tasks before us that we have no occasion to grudge other nations the concessions made them."

The Chinese have been endeavouring for some years to raise sufficient capital to construct a railway connecting the

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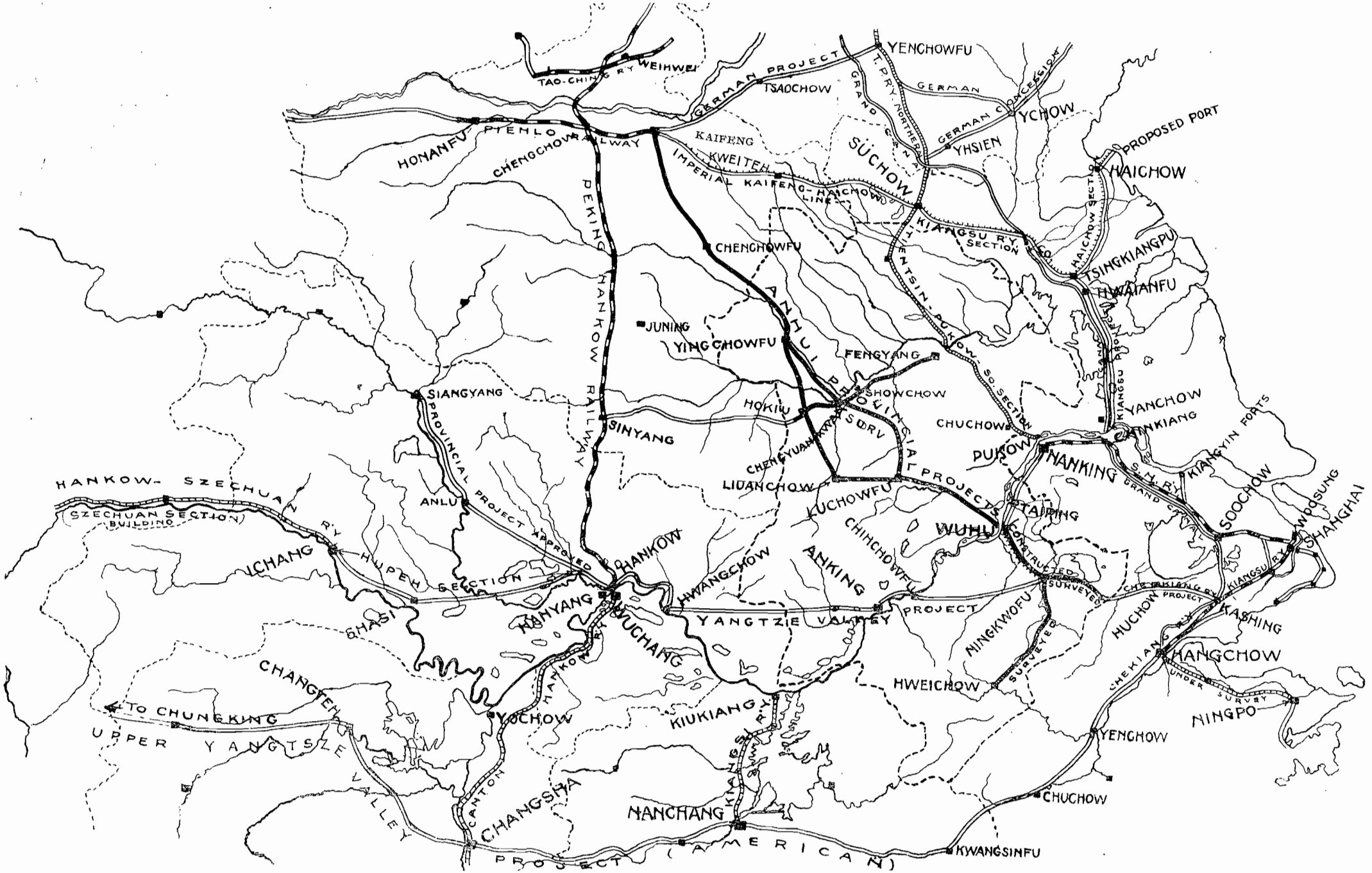
THE FAR EASTERN REVIEW'S SKETCH MAP OF RAILWAYS IN CENTRAL CHINA, SHOWING THE KAIFENG-HAICHOW SCHEME

The line of the proposed Kaifengfu-Haichow railway is traced in black, except that portion between Suchowfu and Tsingkiangfu, which is to be constructed by the Kiangsu Railway Co., a Chinese concern. The German sphere of influence in Shantung Province is shaded. The project of the Chinese Government, as outlined on the map, clearly shows its great political importance and bearing on the ambitions of Germany, and the prospects of the British lines, and also its relation to the great Trans-Asiatic trunk line approved by China. The Peking Syndicate railway claims to an outlet from the mines to the Tientsin-Pukow railway are practically nullified by the new Chinese scheme. The German project to link the Tientsin-Pukow line with Kaifeng via Tsaochowfu is also without value in view of the new road. It will be noted also that Haichow stands in the same relation to the Yangtsze River junk traffic, as does the great port of Shanghai, and much of this can be diverted through the Grand Canal to Tsingkiangfu and through the Yen River or over the new railroad to the new Port of Haichow. (The above map was published prior to the signing of the Hukuang Loan Agreement, and fails to show the German section of this line.)



MAP ILLUSTRATING RAILWAYS IN CENTRAL CHINA WITH SPECIAL REFERENCE TO THE PROJECTS OF THE ANHUI PROVINCIAL RAILWAY COMPANY, WHICH ARE SHOWN IN BLACK LINES

port of Chefoo with the town of Weihsien on the line of the Shantung Railway, a distance of about 170 miles. Before the construction of the German railway and rise of Tsingtao, the treaty port of Chefoo controlled the commerce of the province. This has since been gradually diverted to Tsingtao and year by year sees the commercial importance of Chefoo as a port diminishing. The merchants of Chefoo believe that a Chinese owned railway tapping the German line at Weihsien would restore the fortunes of the port, by attracting trade to that outlet. A glance at the map will show that this hope is a vain one, and such a line would only be of local importance and exert influence over a very small territory. Instead of a commercial blessing, it might prove otherwise, for the German line by a legitimate exercise of discriminating rates for through shipments to Tsingtao could attract considerable trade that now flows out through Chefoo. The Chinese accuse the Germans of obstructing and opposing their efforts to construct this line for the restoration of Chefoo's prosperity. They may have good grounds for the accusation. On the other hand, it would not make a particle of difference in the situation, for as long as Germany controls the Shantung railway, through shipments from the interior destined for export or *vice versa* must be carried over its rails, and during the life of the 99 year lease, there is no way to circumvent or evade her control over freight rates in Shantung. The Chinese may ultimately construct the Chefoo-Weihsien railway, but there the matter ends. It is a purely local affair subsidiary to and dependent upon the German line for such trade crumbs as it may feel disposed to throw its way. This line might ultimately prove a profitable undertaking from the passenger receipts.

There is just one avenue open that China might follow in order to liberate her Northern commerce from passing over the German rails to Tsingtao. Instead of constructing a railway from Chefoo to Weihsien, the line could follow the coast, skirting Laichow Bay, striking westwards through Pinchow and Wutingfu to Tehchow connecting there with the Tientsin-Pukow line and the projected connection with the Peking-Hankow line at Chengtingfu, making possible a through Chinese trunk line from a Chinese port to Shansi, Northern Chihli and beyond. With several millions expended on port works, breakwater and other improvements at Chefoo independent of the railway, and about $13,000,000 gold more to construct the 320 miles to Tehchow and another $4,500,000 for the 110 mile connection to Chentingfu, with a possible $3,000,000 gold for a bridge over the lower reach of the Yellow River, or a rough total of $25,000,000 gold, China could control her own northern port and revive the prosperity of Chefoo. By lower freight rates, discrimination against the German line and a patriotic campaign to patronize a national railway such a scheme if possible of realization would be profitable, provided, however, that Chinese patriotism rises to the heights of subscribing the entire capital from within the country. If they fail, and seek foreign assistance, the Germans must be first consulted. A loan for $25,000,000 or even half that amount, to be employed in opposition to the national programme, would never receive consideration from any German syndicate.

It may be taken then for granted that there is no scope for the expansion of a purely Chinese national railway policy in Shantung, or those regions tributary thereto embraced under the loan agreements and understandings arrived at between Germany and China, so we may therefore eliminate Shantung from any place in such a scheme, until such time as Germany is willing to forego or relinquish some of her advantages.

The region to the immediate south of Shantung in North Kiangsu and Honan and westwards in Shansi and Shensi along the Yellow River valley, embraced in the territory tributary to Chinese projected central trunk line, contains some interesting railway puzzles to work out. In the northern horn of Honan province, is found the Tao-Ching Railway, built under the terms of a mining concession granted by the Chinese Government to the Pekin Syndicate in 1898. Clause 17 of this concession is as follows: —

"Whenever it may be necessary for any mine to make roads, build bridges, open or deepen rivers or canals, or construct branch railways to connect with main lines or with water navigation to facilitate transport of Shansi coal, iron and all other mineral products from the province, the Syndicate on reporting to the Government of Shansi is authorized to proceed with the works, using its own capital without asking for Government funds."

This clause has been interpreted by the Corporation as conceding not only the right to construct a railway from the mines in Honan, to an outlet at Taokow on the Wei River, but also the right to a line from the mines to the nearest deep water navigation on the Yangtsze River. The first line was accordingly built, having a length of 96 miles. A survey southwards through Honanfu, to Siangyangfu on the Han river was made, but this was subsequently abandoned in favor of a line across the country to Pukow, on the Yangtsze, a distance of 350 miles. And this interpretation of the clause, was recognized by the Chinese Government. As compensation for the slight to British interests in ceding the Peking-Hankow concession to Belgium, the Chinese Government in 1898 granted the British and Chinese Corporation the rights to a railway commencing at Sinyang, a town on the Peking-Hankow Line, and terminating at Pukow on the Yangtsze. Later on, the same corporation received the concession for the southern section of the Tientsin line terminating also at Pukow. The conflicting situation so created was subsequently solved by a combination of the above mentioned syndicates under the name of the Central Chinese Railways, Limited for equal participation in all future railway development north of the Yangtsze.

The Sinyang-Pukow line is still on paper, and in time may be constructed. The Tientsin-Pukow line is completed. If the former concession is carried out, then the claims of the Peking Syndicate find expression in the rights covering a railway from the mines to some point on the British section of the Tientsin-Pukow Railway line north of Pukow. A glance at the map will disclose that these claims if allowed, will nullify the advantages of the proposed Chinese central trunk system. The point is, that the claims exist, and are recognized by the Chinese and British Governments, and cannot be set aside without compensation. In addition to these recognized claims it appears that the Chinese Government entered into certain contracts with other British interests dated 5th November 1899 and 3rd June 1902 in connection with the construction of embankments for waterways and railways in the Yangtsze and Yellow River Valleys. These contracts are held as binding on the Chinese Government, but the British Foreign Office has refused to recognize their validity or protect the interests of the holders. It appears that these contracts conflict with rights afterwards ceded to the recognized British syndicates and the refusal of Sir Edward Grey to intervene in favour of the superseded interests has provoked many bitter and adverse criticisms of his policy. We are not familiar with the specific details of the above contracts and their exact bearing on projected railways in the section of China under discussion. But the claims exist and undoubtedly will again be advanced for recognition whenever an opportune moment presents.

Just south of the Yellow river we find the Pienlo Railway in operation from Kaifengfu to Honanfu built under a loan agreement with a Belgian syndicate. This short road connecting the two important cities of Honan is the first expression of the much talked of Central Trunk line which will proceed westwards via Tungkwan, Sianfu, Lanchowfu and across Chinese Turkestan to the frontier cities of Kashgar and Ili. The first section westwards from Honanfu (Loyang) to Tungkwan is known as the Lotung Railway. From Kaifengfu eastwards the projected trunk line is known as the Kaifeng-Haichow Railway.

The Belgian Loan Agreement under which the existing section from Kaifeng to Honan (Pienlo) was constructed contains a clause as follows: —

Article 23.—Should the Compagnie Générale de Chemins de Fer et de Tramways en Chine finish satisfactorily the work for the railway from Kai-feng Fu to Ho-nan Fu, complying strictly with all the provisions of the present contract, and should the Chinese Government decide to extend the railway from Ho-nan Fu to Si-ngan Fu, the Director-General of the Imperial Chinese Railway Company agrees to come to an understanding preferably with, and to grant an option for the loan necessary for said

undertaking to, the Compagnie Générale de Chemins de Fer et de Tramways en Chine in conformity with the provisions and conditions of the present contract.

This undoubtedly gives the Belgian syndicate the first option on furnishing the funds not only for the Lotung section, but also as far as Sianfu, the provincial capital of Shensi, a distance of about 210 miles, necessitating an approximate expenditure of $10,000,000 gold. On the completion of the line however instead of applying to the Belgian syndicate for a further loan to construct the extension to Tungkwan and Sianfu, the Chinese in their desire to dispense with foreign aid, determined to continue the work with their own funds. The people of the province organized a society styled the Honan Railway Investigation Company, with a capital of $15,000,000 with shares at $5 each. Their "investigation" included the construction of a line connecting Kaifeng with Tsinanfu via Yenchow, thus playing into Germany's hands. Warned away from this project by Peking, they investigated a line eastwards towards Suchow to connect there with a local line, and then after a lapse of three years they finally got down to business and decided on taking up the extension to Tungkwan, and reorganized the company as the Lo-Tung Railway Co. The amount raised by popular subscription was however insufficient to commence serious work although the market was flooded with inquiries for construction material. A loan was necessary. Did the Honan gentry turn to the Belgian syndicate in compliance with the contract of the Central Government?

Not they. They tried everywhere else, and finally realizing the impossibility of securing a foreign loan on their own terms, they made a contract with the Kung-i Bank for a 6.8 per cent Tls. 5,000,000 loan, which this bank having a paid up capital of only Tls. 200,000 tried in turn to negotiate with foreign syndicates. Up to the outbreak of the revolution the Lotung Railway Company had exhausted about every possible expedient to borrow money from everyone except the Belgian syndicate who undoubtedly stands ready to comply with the clause of the Kaifeng-Honan Contract giving them the first option. The extension of the section to Sianfu the capital of Shensi Province has failed so far to elicit any interest on the part of the Provincial gentry, and no funds have been raised for the purpose. The people of Honan who have contributed to the Lotung Company, have some equity which has to be considered in any future scheme, and it would appear that the Belgian syndicate's claim to finance the line in case foreign money is needed is indisputable.

It will be remembered that the Chengtai railway concession negotiated with China by a *Russian* Bank, was constructed by a *French* company, and the alleged rights to finance its extension towards Sianfu was advanced at Peking by the *Belgian* Minister, thus confirming the close community of interests existing between these three Powers for the advancement of a railway program in China. The rights to finance a line to Sianfu, from either direction therefore undeniably rest with this combination, and it is doubtful whether the three Powers concerned will entertain any alternative proposition tending to deprive their nationals of these acquired rights.

The construction of the central trunk line beyond Sianfu as far as Lanchow the capital of Kansu Province, a distance of some 350 miles, will necessitate another $17,500,000 gold investment. While no one Power has acquired special railway rights in Kansu Province, Belgian influence is already very strong; the Mining adviser to the Provincial government is a Belgian.

From Kaifeng to Sianfu or perhaps to Lanchow, the construction of the central trunk line has some promise of being a profitable commercial venture, repaying within reasonable time the interest on its cost. From Lanchow westwards through the desert sands 1,600 miles to Ili, or 1,800 miles to Kashgar a railway must be financed under government guarantee as to principal and interest. The line would be purely political and cost approximately $90,000,000 gold.

Does the importance of Chinese Turkestan, or Sinkiang justify the expenditure at this time of $90,000,000 gold to solidify and maintain China's authority, without taking into consideration the certain annual guaranteed interest charge of at least $5,000,000 gold that will have to be provided until such time as the 1,800 mile desert railway pays a profit?

It must not be overlooked that fourteen years ago, Russia included the construction of this line, in the projected continuation of her own Central Asian schemes. If the construction by China of a little railway in Manchuria is prohibited by Russia on the grounds of menacing her strategic position on the Amur, is it likely that she would willingly consent to the construction of a line into far distant Sinkiang where her influence is now supreme and her interests are far greater and of more vital importance? If the projected Chinchow-Aigun Railway is considered prejudicial to Russia's strategic position in that section, because of the possibility of its falling into Japanese hands in case of war, would not China's projected line to Ilifu and Kashgar, be a far greater menace if they fell into the hands of another foe at some critical time in the future, thus exposing Russia's Central Asian strongholds to a flank attack.

China would probably be permitted to finance and construct a railway into Sinkiang, but only under some well defined agreement with Russia. The same applies to any Chinese line through Tibet where British influence must always remain supreme while India holds the key to the Empire.

Apart from the prohibitory clause of the Tibetan Convention, the construction of any Chinese railway through Tibet terminating at Kashgar would be viewed with the deepest concern by the British Government, and if China should at any time in the future secure the funds from other interests and persist in applying them for its construction, Russia's precedent in Manchuria would assuredly be followed by Britain, to safeguard her position in India. It is hardly probable that such a situation would ever arise, on the other hand a turn of world politics may again see Russia extending her Central Asian outposts and again knocking at the gates of India, while her financial allies and backers are making her path easier by financing a Chinese line through Tibet which ultimately might be connected at Kashgar with Russia's Central Asian system, facilitating her approach to the Himalayan passes which now act as a formidable natural barrier to any northern foe.

Russia's strategic railways throughout Asia exhibit an absolute continuity of policy, for though construction may be suspended from time to time, the main scheme is always kept in view and followed out slowly but surely. A glance at the map will conclusively prove that these lines which now appear to be enmeshing China's border dependencies are also gradually reaching out with a fixity of purpose that will once more place Russia in a position to assume an aggressive policy towards India, from the point where she left off thirty years ago. The present British Government may have compounded its differences with Russia and reached some understanding concerning future movements in central Asia, but it is only necessary to study the map and follow Russia's enormous expenditures in what she now terms commercial railways to be convinced that her schemes can only have one ultimate purpose.

It is clearly apparent then that apart from the financial and engineering features of the Lanchowfu-Ilifu-Kashgar sections of China's proposed Central trunk line, there are weighty political difficulties involved, which almost preclude any possibility of its becoming a reality in the near future. This applies with even more force to Dr. Sun's project of Tibetan trunk lines terminating at Kashgar.

Having followed the proposed central trunk line to its logical far westward terminus we may retrace our steps to the starting point at Kaifengfu, and turning eastward study the vagaries of the project in its endeavor to find a way to a deep water outlet under China's exclusive jurisdiction, without clashing with those rights already surrendered to foreign or native provincial interests.

It has been previously demonstrated that the logical outlet of such a line is northeastwards, through Tsaochow to Yenchow uniting with the existing lines terminating at the port of Tsingtao. It has also been indicated that Germany is keenly observant to the advantage such a line would confer on Tsingtao, and has secured a promise from the Chinese Government that if foreign funds are required, Germany will have the first option

to supply them. With this route closed, there would appear to be no alternative other than a line to some deep water port on the Yangtsze, and the logical point in this direction is Pukow. We find, however, that the project would almost parallel the rights surrendered to the Peking Syndicate, and capitalized by them in the organization of the Chinese Central Railways, Ltd., and as we will see later on, it also clashes with the plans of the provincial Anhui Railway Company. The trunk line, debarred from striking northwards without crossing the boundary of Shantung and entering Germany's sphere, and with all natural outlets closed, the Chinese Government determined to build due east from Kaifeng, skirting the southern Shantung boundary to Kweiteh, thence to Suchowfu, crossing the British Section of the Tientsin-Pukow line at this point, and southeast to Tsingkiangpu on the Grand Canal. The rights to this last section from Suchowfu to Tsingkiangpu had been ceded by the Central Government, and included in the plans of a local concern styled the Kiangsu Railway Company. Capital had been raised and a few miles of rails laid down out from Tsingkiangpu, when further progress was abandoned for lack of funds. The company's plans included the construction of a through line from this point along the Grand Canal to the port of Yanchow on the Yangtsze opposite Chinkiang. The Central Government decided to appropriate the Suchowfu-Tsingkiangpu section of the Kiangsu Railway Company for the central trunk line, and from the latter point follow the Yen River northwards to Haichow, and there develop a harbor behind a small island off Yuchow Promontory. This project was then known as the Kaifeng Haichow line and two years ago tentative overtures were made to foreign financial syndicates to advance funds for its construction, but serious negotiations were never opened. The Vice-President of the then Board of Communications H.E. Shen Yun-pei, claimed Haichow as his ancestral home, where he controlled large interests in the adjacent districts. This may help explain the government's enthusiasm at that time, and throw a side light on their selection of this unprotected and little known port as the terminus of the projected central trunk line. A deep water port at Haichow under the lee of the small islet off the Yuchow point, might be built up in time, but only at an enormous expenditure, and it is doubtful then whether it would ever be popular with shipping interests. Dr. Sun's scheme contemplates the selection of some point on the Yangtsze as the terminal of the central trunk system, but the exact point has not yet been officially disclosed. Pukow is generally admitted to be the most favored location, though Yangkow opposite to Chinkiang, the terminus of the projected Kiangsu Railway company's line, has the same water advantage. If Pukow, should be selected, the British section of the Tientsin-Pukow line would become the most important section of the through system.

As an indication of the working of the Chinese mind, we reproduce an item appearing in the *North-China Daily News* of 16th September, or about the time that Dr. Sun departed from Peking to commence active work on his great scheme. "Hsuchou-Tungchou Railway.—The Directors of the Kiangsu Railway Company have obtained a loan of Tls. 45 000,000 from a French Syndicate, reports the *Shenpao* of yesterday. The loan is contracted by the Company as a private concern, and is to be repaid also by the Company privately. The money is to be devoted to the construction of the railway between Hsuchou and Tungchou, of which Mr. Li Jen-tsai has been appointed Manager. The work of construction will begin two months after receipt of the money."

This probably has no connection with Dr. Sun's scheme, and the negotiations with a French syndicate may have no foundation in fact, and they assuredly lack Dr. Sun's sanction. The item nevertheless provides food for serious thought. If true, it is conclusive evidence that the provincial railway company does not intend to have its line set aside, or incorporated in any general scheme under control of the Central authorities, and to forstall Dr. Sun, it has turned to the one financial group disposed to consider an overture for a loan. British railways in China, are practically a monopoly of the British & Chinese Corporation, and their interest centers in having the trunk line terminate at Pukow, utilizing their section of the Tientsin-Pukow Railway as the outlet. A Belgian syndicate financed the Kaifeng-Honan (Pienlo) section of the trunk line, and holds the option on the extension to Sianfu. It does not appear that they have any option to finance the extension eastwards towards Suchowfu. It is therefore significant that the Kiangsu Company would hasten to negotiate with a French (Belgian) syndicate to finance the line from Suchowfu to Tungchow at the mouth of the Yangtsze, thus permitting the Franco-Belgo-Russo allied interests to dominate the future control of the entire system. The rights of the Kiangsu Railway Company within the provincial limits of Kiangsu, entitle them to construct a line 50 miles beyond Suchowfu towards Kaifeng. This leaves a stretch of 120 miles from the Kiangsu provincial border to Kaifeng in Honan, which at present come within the "investigations" of the Honan authorities. It is apparent then that if a French syndicate concludes a loan at this juncture with the Kiangsu Railway Co., it would firmly establish their control over the entire central trunk line from the Yangtsze to Sianfu, and beyond to Lanchow, here Russian political influence would step in, and the line to Ili and Kashgar come under her influence, thus establishing a through Central Asian line under control of the three allies. The immense political bearing this control might exercise in Far Eastern affairs can be better appreciated by a study of the map. At Sianfu, the same combination has acquired the right to finance that section of the Tung-pu Railway through Shansi to Taiyuanfu, and the future project connecting Sianfu with Chengtu, also comes within their influence. Here if French plans carry through, a connection will be made in the future with their Yunnan railway. All of which tends to illuminate the absolute continuity of policy characterizing Russian railway schemes in Central Asia. The above exposition of conditions surrounding the construction of the central trunk line, make clear a few of the delicate points to be solved before the conflicting elements can be merged into a harmonious whole, and if foreign funds must be secured for the scheme, it will tax the diplomatic skill of Dr. Sun and his advisers to avoid surrendering its control to the Franco-Russo-Belgo-group.

(To be continued)

CHINA AND HER DEPENDENCIES

When the Powers decide to recognise the Republican Government of China will that Government have ceased to enjoy proprietary rights over its immense dependencies, Mongolia, Manchuria, and Tibet? That is the question that is now being asked by everyone who takes an interest in Far Eastern affairs, and the answers vary in accordance with the prejudices, hopes and preconceptions of those who are daring enough to express their views. The importance of the matter can be partially gauged by a consideration of the extent of the territory involved. The eighteen provinces of China Proper contain an area of about 1,500,000 square miles. The area of the dependencies is over 2,500,000 square miles. Should these dependencies elude China's slackening grasp, out of every 400 square miles of the former Empire 250 will have been lost.

Before the revolution Manchuria was acknowledged by treaty to be an integral part of the Chinese Empire, though the special interests of Russia in the North and Japan in the South were tacitly recognized. Mongolia was admittedly a portion of the Imperial dominions and negotiations in connection with this region had always been conducted with the Peking Government. In other words the sovereignty of China over Mongolia was acknowledged, and especially by the Power principally interested—Russia. The position in Tibet was a little different. Here the Chinese Government exercised suzerainty, but not sovereignty. An endeavour to assert sovereignty had been made, however, with some success. The Dalai Lama had been driven to India and China had seized the machinery of government.

With the success of the Republican arms in China proper an entirely new situation was created. In Manchuria outwardly things remained much the

CHINA'S RAILWAY ENGINEERS

The continued expansion of China's railways and the growing necessity for a permanent staff of competent engineers directly in the service of the Government, should inspire the Board of Posts and Communications to take a lively interest in the engineers employed on the various lines now operating, or in course of construction, with the object of selecting the nucleus of a service which will before long become absolutely indispensable to the country. China should have her own engineers. She must depend upon railways for her development, and she must depend upon engineers for her railways. In the immediate future she will be launching upon construction schemes of great magnitude. Where that work will come under her own jurisdiction she should have at her command engineers who are qualified by experience in China as well as by practical effort elsewhere in the world. In the past the good engineer has come, has seen, has conquered, and has gone. Some of him have proved effulgently brilliant in the technicalities of the profession, lamentable failures in the gentle and delicate art of harmonising with the Chinese; some of him have been par excellent in comprehending the Celestial mind, deficient in the higher art of railways building, whilst others of him enjoyed the possession of both the quality of knowing how to work with the Chinese and the wisdom to be able to extract the best results from their own professional knowledge and training. Amongst the latter class is to be found the engineer and the man, and from that class China should begin to make a selection to provide for herself a staff of tried and trained servants who will make her interests their interests and their interests her interests. In short she should begin upon the creation of a properly organised railway service, adequate in every branch, competent to bring into realisation any of her projects, at once efficient from the engineering and general traffic points of view, and economic from the financial. There is scope for such a service, there will be absolute need of it in the not far distant future. On the numerous lines now operating or in course of construction are to be found men who have proved their worth in ability and character—men capable of obtaining the best results from the Chinese workmen and competent to strike the chord of harmony with the officials who must of necessity be associated with them in railway enterprises. In the past such men have been permitted to leave the country. The conditions of railway construction have been such that their services have not been required after the completion of the particular line upon which they have been engaged. They have worked a period of years; acquired not only a knowledge of the Chinese people and country, but in many cases have learned something of the language, and what is of greater importance, have possessed themselves of a knowledge of the capacity of the Chinese contractor and laborer, the worth of his hire, costs of his work, and peculiarities of his character, that constitute a priceless asset in any engineer destined to control such costly undertakings as that of railway construction in this land of the fleeting and the fluctuating dollar. Such valuable knowledge all goes with the engineers who leave the country, and has to be acquired anew by their successors. Mostly, new work in China has been commenced with sectional engineers, if not engineers-in-chief, absolutely strangers to the country, and their ignorance of the multifarious methods utilised by the dishonest among the Chinese to prevent the dollar from purchasing all that it is supposed by the engineer to acquire, has resulted in incalculable financial loss to China. How great a sum has been frittered away through lack of this peculiar knowledge on the part of new engineers will never be known, and whilst there are other avenues by which large amounts trickle from the sight and hands of the accountant, the fact remains that vast sums could be saved by the continued employment of selected men who have graduated in the university of local experience, and who have gained stores of information of the tricks of that great game of graft which has made the name of China a byword in those places where regard is entertained for probity and honest dealing.

By judicious inquiry and selection from among the men who are "making good" on the lines now in course of construction, China could secure a sufficient number to establish a permanent service. The advantages of such a step are obvious. It would pay her a thousandfold in the future and would at the same time enable her to show appreciation of the services of those men who have "played the game" and given to their work the best that is in them. The inducements such a department would be able to offer would be a constant incentive to all engineers and others to do their best—and that is inspiration to constantly efficient work. From such China has the most to gain, but apart from selfish considerations on the part of China, it is not too certain that the engineers themselves have not some moral claim to consideration upon the expiry of their agreements. China will never appreciate, it is certain, what the railway engineer has given, and still gives, to her. Certainly he works for pay, and professes satisfaction with what his agreement stipulates, but there is a spirit which should enable a loftier view to be taken than that circumscribed and dictated by the cold requirements of the law. Engineers give years of their lives in distant, isolated parts of the country, severed for months at a time from their kind, deprived of society, bereft of friends, inadequately provided with food, and possessed of but meagre connection with the outside world. They do this for pay of course, but every servant being worthy of his hire, and every genuinely loyal servant requiting his employer to the full for his hire, is it not fair for them to expect upon proof of competent service, that they may be retained in the land wherein they have gained so much knowledge that is peculiarly fitted for employment in no other country than China, and when so much of the work for which they are eminently suited is yet to be done? If there is an affirmative response to this question, then the establishment of at least an engineers' service in connection with China's railways is the easiest way to confer immeasurable benefit upon China, and appreciation upon those who loyally serve her.

Kirin-Changchun Railway.—The present indications are that the Kirin-Changchun Railway will be ready for service between Changchun and Kirin about the middle of October. At present the construction work has progressed as far east as two miles on the east side of Tumenling Pass. This means that the available length of the railway is 48 miles, leaving a span of 31 miles from Kirin yet to be taken in hand. Even in this section the roadbed has long been finished, and only part of bridging work remains to be completed. The light-rail line winding up and down Tumenling Pass is to be replaced eventually by a through rail service to be constructed by following the original plan of excavating a tunnel through the Pass. In view of the straitened circumstances in which the Peking government has found itself, this scheme of accelerating the connection of Kirin with Changchun by rail through the adoption of the light rail service over the Pass meets the hearty approbation of every one interested in this Railway directly or indirectly. The management is looking forward to the flattering returns which this line will render. The fertility of the soil along the Railway is proverbial. It is capable of yielding a fine crop of Beans, Wheat, &c., for three consecutive years, without receiving attention other than the necessary weeding, &c., in the form of manure, &c., Especially Beans produced in this belt contain a larger percentage of fatty substances and fetch better prices. These cereals together with Lumber, Tobacco Leaves, Medicinal Herbs, &c. will be exported by rail, and imports such as Coal, Cottons, Tea, Shumshu, Matches, Toilette articles, Provisions, &c., will be found in good quantities for the trains to take back from Changchun to Kirin. The freight receipts to be realized during the five busy traffic months from November to the following April are estimated roughly at S. Y660,000, from which the working expenses, including salaries, sundry disbursements, expenses for construction, maintenance of way, and operation, and interest on the Railway Loans, may be deducted to the estimated amount of S. Y466,000. This will leave for the net profit the balance of S. Y194,000, which sum may be set aside for the construction fund of the tunnel piercing through Tumenling.

At present, the construction fund is being remitted from Peking in a sum of S. Y40,000 or so per remittance. It is expected that the whole outlay invested in this line, before it is opened to traffic about the middle of October, will total only S. Y3,500,000 which gives the average of about S. Y43,000 per mile. This will be the lowest average cost in railway construction on record, although the temporary character of the light rail line over the pass must be taken into consideration.

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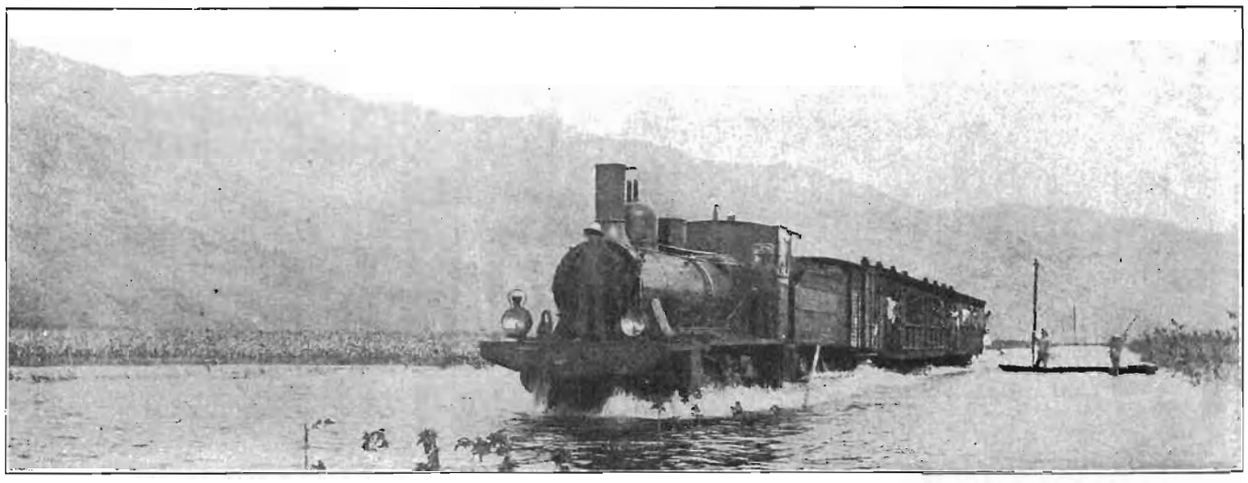
CLOSING THE DOOR IN YUNNAN

THE OPERATION OF THE FRENCH YUNNAN RAILWAY



TRAIN CROSSING TA CHUANG PLAIN, DURING THE FLOODS OF LAST YEAR

The opening to traffic in April 1910 of the French railway from Laokay to Yunnanfu terminated one of the world's most interesting romances of railway building. These 287 miles of mountain meter guage line are a magnificent tribute to French engineering skill, and as far as the construction work goes, will stand as a monument to the perseverance and ingenuity of man in one of his most disheartening combats against the combined forces of Nature.

Before the completion of the line, the optimistic element in Indo-China saw in Yunnan an Eldorado, and prophecied rich returns for the railway and great prosperity for the colony. With reasonable freight charges the line would draw to itself the trade of the entire province, and compete with Shanghai on one hand for the trade of Szechuan, and on the other with Rangoon for the trade of Western Yunnan and Eastern Tibet. There were others who maintained that the line would never pay unless it was extended northwards to Szechuan Province, in conformity with the original schemes of Governor Doumer, but whatever hopes the French might have had of securing a concession for this extension were abandoned when the Yunnan Viceroy through the Waiwupu, engaged the services of Mr. W. S. Dawley—an American Engineer—to survey a route from Yunnanfu to Suifu on the Yangtsze. The scheme of extending the line northwards into Szechuan, and attracting the trade of West and South —west China to Haiphong, was given such publicity by the French Press, that the Chinese Government resolutely refused consent to the plan. If it became necessary to construct the line with foreign funds, France undoubtedly would have brought pressure to bear on China, to monopolize the loan, so to avoid friction, the Chinese decided to build the line as a Yunnan provincial enterprise. The services of the American engineer were secured, the survey has been completed, and construction only awaits settled conditions in the country.

Warned by her experience in Manchuria, China recognized the necessity of a railroad entirely within her own territory, one that would release her commerce from the transit and other taxes imposed by the French line, and permit the free movements of her troops. Two years ago, Mr. K. S. Low, one of China's best railway engineers, was ordered by the Railway Board, to survey a route from the West River Valley into Yunnan. This line, after construction, would make China independent of the French railway and checkmate the scheme of building up the port of Haiphong with the commerce of China at the expense of Canton. But pending the construction of these lines, the French railway has a monopoly of carrying the import and export trade of Yunnan, or at least of those districts within the influence of the line.

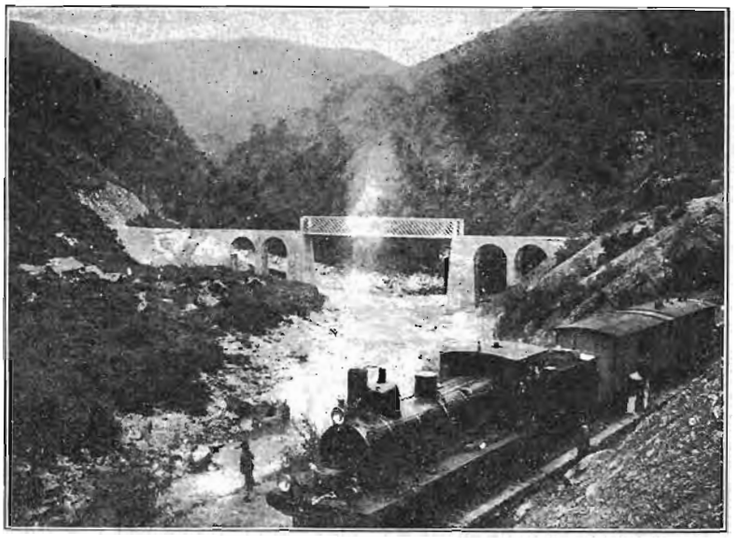
With such a bright prospect before them, and with everything their own way, it would seem that the French railway company would impose such tariffs, as would facilitate the rapid development of the province and create traffic for the railway. We find however that owing to the alleged high cost of construction, washouts, landslides and interruptions to the service, that the financial returns have been most disappointing. Instead of facing the situation in a manner calculated to inspire confidence and attract capital to the province, and encourage the expansion of trade, the railway authorities have adopted the policy of raising the freight rates to all the traffic will stand, and in addition, have devised a system of charges and taxation that for intricacy and mystery rival the old system of Chinese Hong milking. As a natural consequence traders are again taking to the older and cheaper river and caravan routes.

American Consular reports state that goods are still imported into Yunnan, Kweichow, and west China through Burma, thence by pack train to Bhamo and on to Tengyueh, and then to Batang about 400 miles north, or to Talifu, and even to Yunnanfu where the goods are distributed all over that part of the country, as they have been since the beginning of the trade. These costly means and tedious routes are used in spite of what would seem to be the manifest advantage of the rail route to Yunnanfu or to intermediate points and thence by the natural caravan routes to various points in the Province and west China.

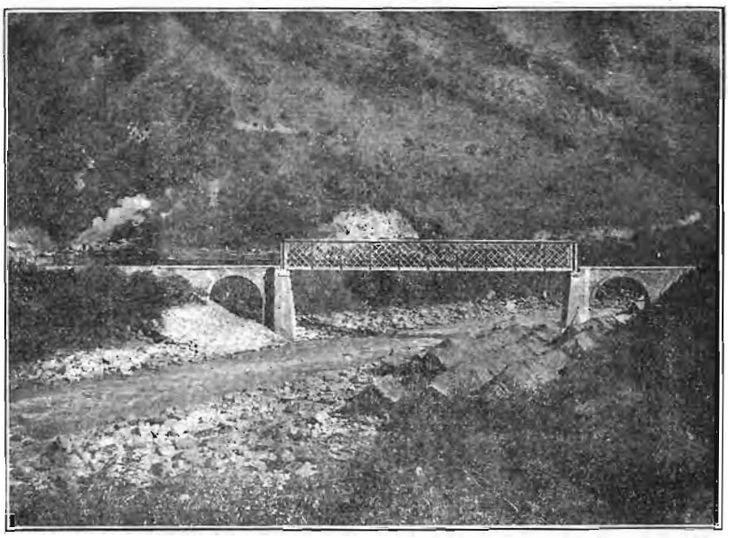
Another report says that the only serious drawback to the development of this interior trade along new lines is the fact that the French colony charges 20 per cent of its full import duty on goods entering Indo-China as a transit duty across Indo-China into Yunnan and Kwangsi Provinces. This transit charge is large enough to overcome the advantage of rail haul on foreign goods going into west China, and in spite of the railway's facilities, the trade returns from Customs stations like Tengyueh in West China, show substantially the same trade in goods imported by mule back from India that has been heretofore and before the railway's service to Yunnan and Szechwan was possible. Such goods have actually been delivered in Yunnanfu itself after 32 days transportation on mule back in direct competition with railway-borne goods.

The American Consul-General at Hongkong (George E. Anderson) in one of his recent

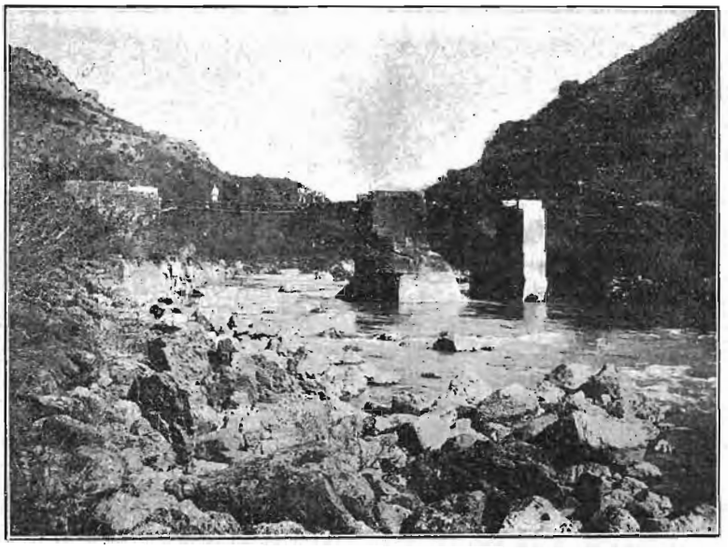
PE CHI-CHAI, THE STATION FOR MENGTZE



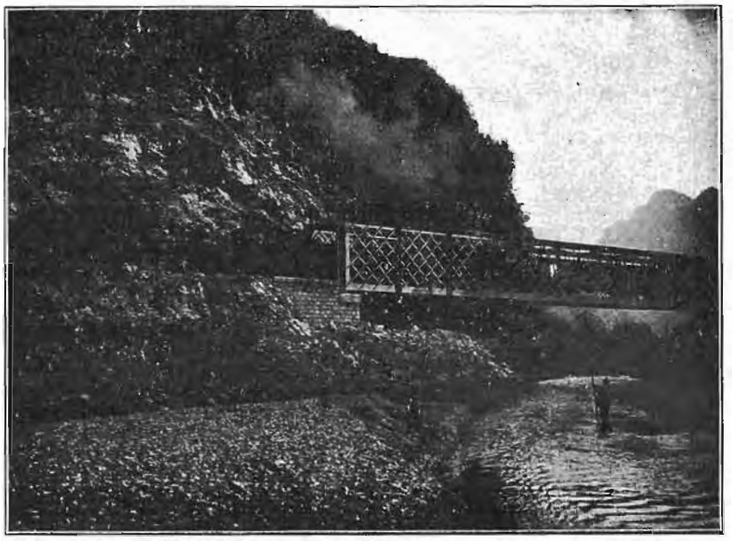
A SECTION BELOW LOU KOU CHAI



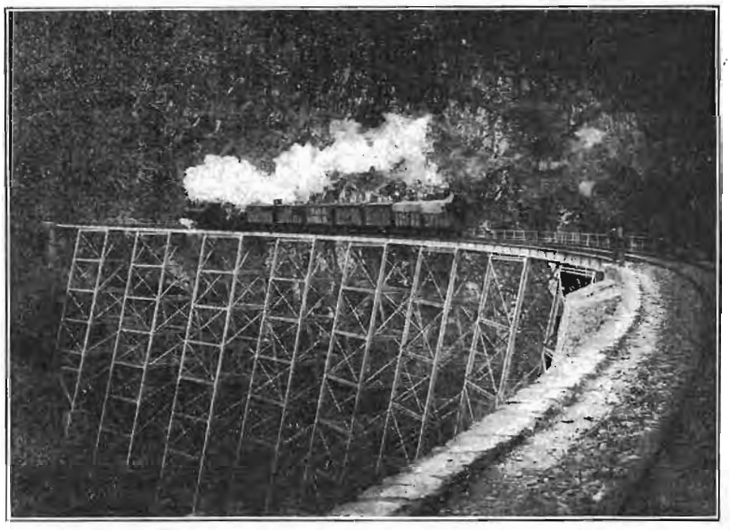
A BRIDGE ACROSS THE PALO-TAH-HO



REMAINS OF A BRIDGE, SWEPT AWAY BY A FLOOD



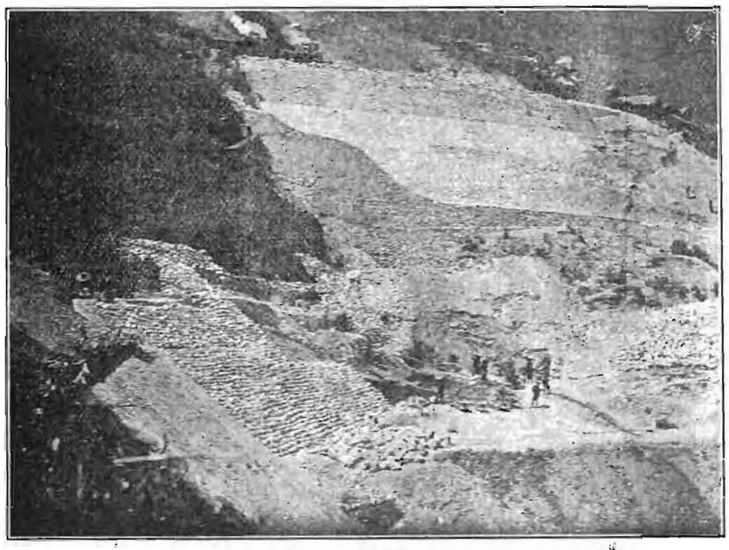
A BRIDGE ACROSS THE NAMTI



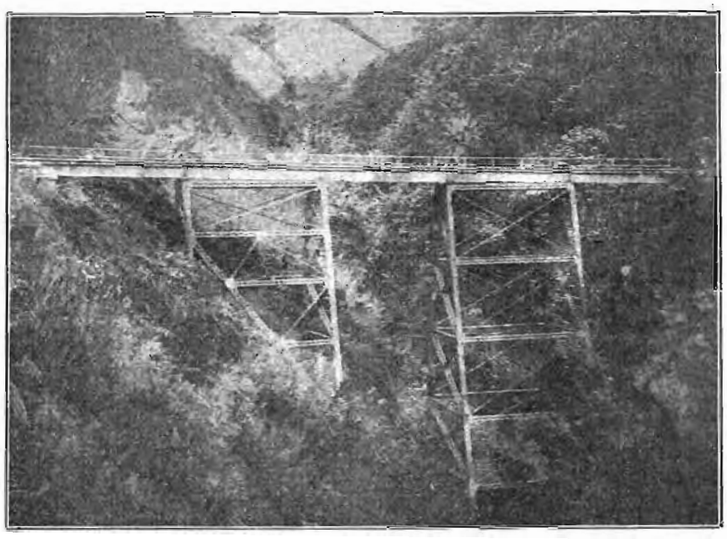
A LONG TRESTLE

MASONRY BRIDGE CARRIED AWAY BY A LANDSLIDE

VIEWS OF THE YUNNAN RAILWAY

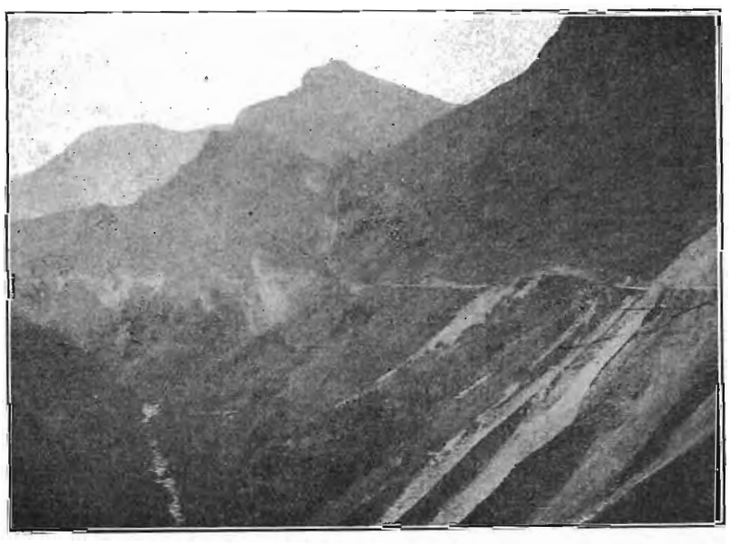


STAYING A LANDSLIDE

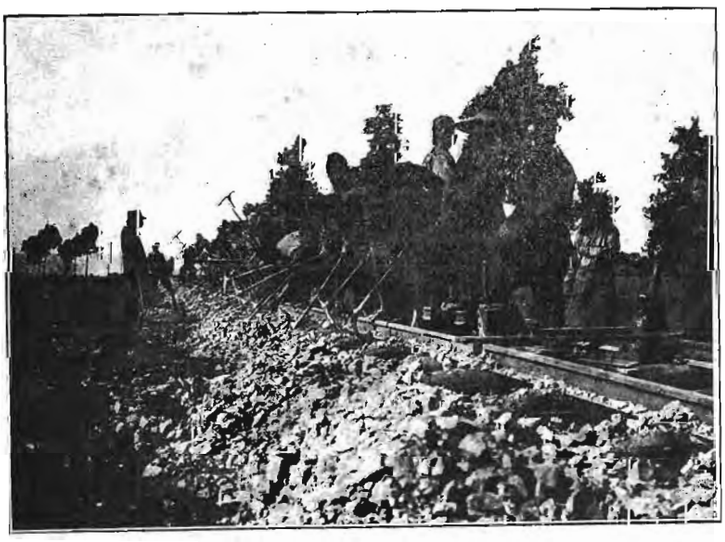


TRESTLE OVER A GORGE

A SECTION OF THE LINE



A ROUGH SECTION



REPAIRING THE LINE

A SECTION OF THE GREAT HORSE SHOE

VIEWS OF THE YUNNAN RAILWAY

interesting reports, called further attention to the trade situation existing in Yunnan Province as a result of the working of the new railway. This document, republished in the June issue of the *Far Eastern Review* under the title of "Chinese Railway Project" is one of the most important contributions on the practical operation of foreign controlled political railways in China. Aside from one or two editorial comments in the Hongkong daily papers, the report has attracted little or no attention throughout the Far East. We venture to assert that if the same report had emanated from any foreign consul stationed in Manchuria, every newspaper in the Orient would have given it full publicity with editorial comment as another evidence of Japan's violation of her pledged word, and as proof of discrimination against European or American shippers in the operation of the South Manchurian Railway.

Consul-General Anderson opens his report with the following significant paragraph:—

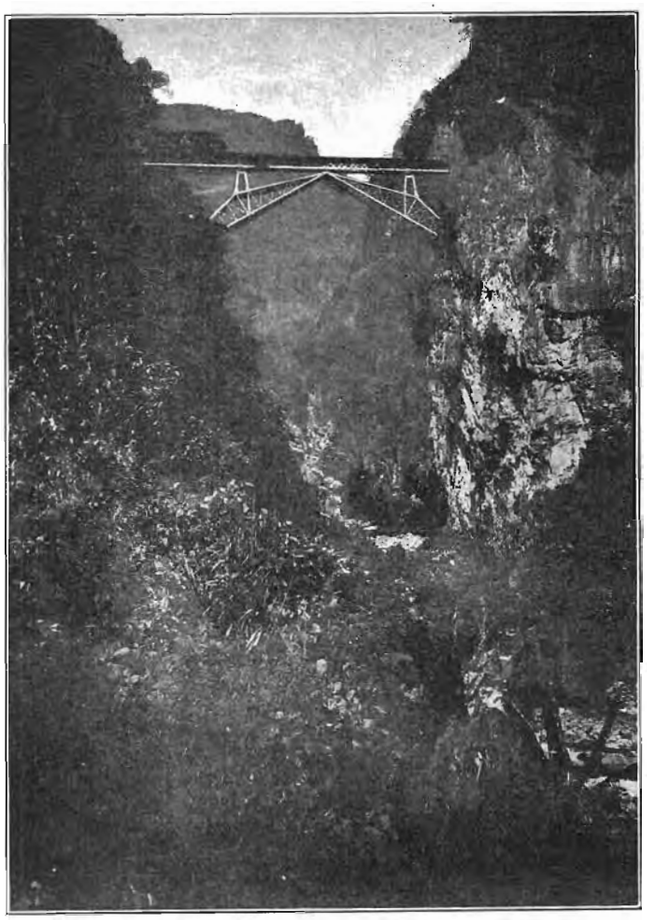
"At the instance of the consulate general in Hongkong, several American manufacturers of railway material have sent a representative to Mengtze and Yunnanfu (both cities in the Province of Yunnan), and two important locomotive companies also have men on the ground, in connection with the contract to construct the proposed line from Yunnanfu to Luchowfu, on the Yangtze River, in the Province of Szechwan. *The matter of freight rates, however, over the French railway from Haiphong, in French Indo-China, to Yunnanfu, is of such controlling importance that the projectors of the line are seriously considering the construction of a line from Yunnanfu to Nanning (on the Yoo River in the Province of Kwangsi), as a means of avoiding these excessive charges, as well as opening up the Province of Yunnan and west China by the new route.* This road would give communication by rail and water with Hongkong and Canton."

In other words the above paragraph tells the world that owing to the exorbitant freight rates exacted by the French authorities on material for the construction of projected Chinese Government railways in Yunnan, it is considered more economical to construct an entirely new railway through Chinese territory from Yunnan to an outlet on the West River, than pay the prohibitive French charges. In concluding the report Mr. Anderson states "In addition to freight on the long ocean haul from the United States to Haiphong, the freight on rails from Haiphong to where they are needed is about 150 per cent of the actual price of the rails in the United States."

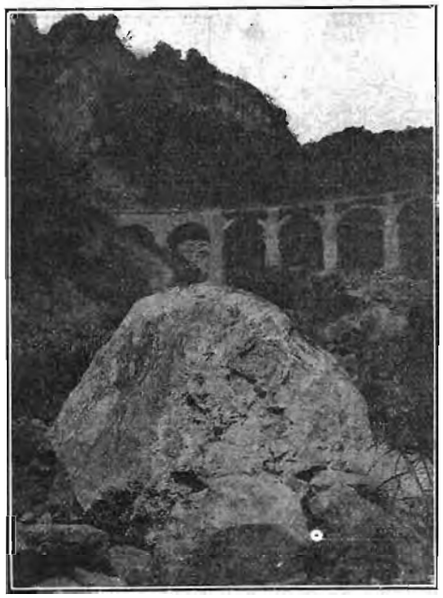
The rates are quoted as follows:—"These rates are upon five classes of freight and are assessed upon the basis of five zones between the seaboard at Haiphong and Yunnanfu. The rates are based upon considerations of comparative value and comparative bulk of goods as well as weight, and in general follow similar classifications in France. They vary from 11 to 26 cents local currency (4.73 cents to 11.18 cents gold at present exchange) per metric ton (2,240 pounds) per kilometer (0.62 mile) for the higher class of goods to 4 to 10 cents local currency (1.72 to 4.3 cents gold) per metric ton per kilometer for the lowest class of goods. To the present rates a surtax of 10 per cent is now added on the ground that exchange is low, but this surtax will be removed when the local dollar will equal 50 cents gold. On the basis of the rates fixed in the regular tariff the charges on the different sections for the several classes of goods amount to the following in gold dollars per metric ton:

Sections	Distance	Class 1	Class 2	Class 3	Class 4	Class 5
	Miles					
Haiphong to Yenbay	104	$11.73	$9.60	$9.60	$5.33	$4.26
Yenbay to Laokai	87	7.28	5.92	4.58	3.64	2.73
Laokai to Mengtze	111	19.90	16.07	12.25	9.95	7.65
Mengtze to Amsichou	27	2.40	1.95	1.48	1.20	.93
Amsichou to Yunnanfu	152	13.65	11.02	8.40	6.82	5.25
	481	54.96	44.56	36.31	26.94	20.82
Surtax	.....	5.50	4.45	3.63	2.69	2.08
Total	.....	60.46	49.01	39.94	29.63	22.90

THE FAMOUS BRIDGE



VIEW OF SAME BRIDGE FROM THE CANYON



THE BOULDER THAT CARRIED AWAY THE MASONRY BRIDGE (SEE PRECEDING PAGE)

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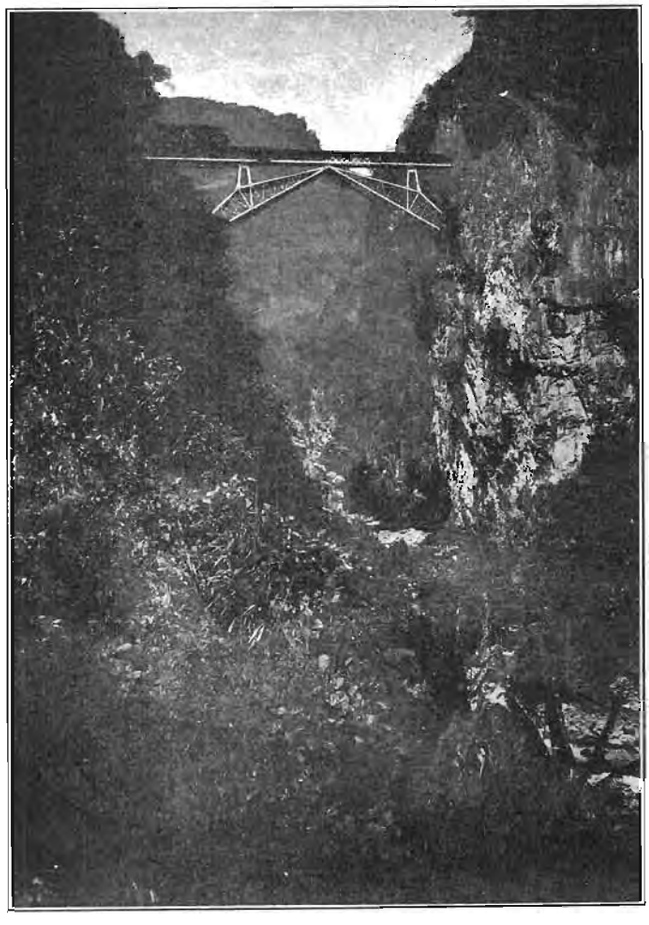
THE FAMOUS BRIDGE



VIEW OF SAME BRIDGE FROM THE CANYON

THE BOULDER THAT CARRIED AWAY THE MASONRY BRIDGE (SEE PRECEDING PAGE)

OFFICIAL MAP OF THE YUNNAN RAILWAY

SCALE 1/1.000.000e

0 5 10 20 30 40 50 Kin.

ORIGINAL SURVEY

PRESENT ROUTE OF RAILWAY

EXTRA FEES.—The rates on various classes of goods from Haiphong to Yunnanfu, therefore, a haul of 481 miles, range from about $23 gold to over $60 gold per metric ton. To the rate of $23 to $60 per ton from Haiphong to Yunnanfu, the railway company adds a charge of about $3 local currency, or $1.30 gold, as a "customs" charge, which seems to be designed to cover the clerical expenses of clearing goods through the Indo-China and the Chinese customs. The charge has, however, no actual connection with the customs duties, and is independent of the duties levied either in China, where 70 per cent of the usual Chinese customs duty is collected or in Indo-China, where 20 per cent of the full import duty on goods from abroad is collected as a transit tax on goods thus entering China. The freight rates above given are modified somewhat by rates for carload lots, but are increased for goods of a dangerous nature, considerable quantities of which are used in railway construction and mining enterprises."

Since the above official report was made, we have received corroborative data from Yunnan concerning these freight charges and extra fees.

As indicated by Mr. Anderson, the freight rates are calculated on a fixed exchange of francs 2.50 to the Mexican dollar. At this rate of exchange or under, an arbitrary surtax of 10 per cent is added, to make up the loss in exchange. If the exchange is over francs 2.50 to the dollar, the rate is reckoned at par. So no matter what the fluctuations of silver are, the shipper pays the railway "coming and going." As the dollar has only once since 1910 exceeded in value francs 2.50 in practice the 10% surtax has been almost permanent.

In addition to the exchange surtax, an arbitrary charge of $4.44 (Mexican) per five ton car is levied at the frontier, ostensibly for examining the seals by the customs officials. If the shipment is less than a five ton car load lot, the charge is reckoned at 20 cents per package on the entire shipment. This, notwithstanding the fact that cars with small lots are dispatched through to Haiphong direct without breaking the seals.

The freight rates are undoubtedly exceedingly high, and in addition to this heavy burden on commerce, it is freely claimed, notwithstanding consular and official assurances to the contrary, that discrimination exists in favor of goods shipped to or from France. It is furthermore asserted that shippers other than French, are saddled with charges levied in Haiphong on import and export consignments that do not show in the official published railway rate schedule, and which are contrary to treaty stipulations.

There are five main classes of freight. Under the First Class are comprised provisions, explosives, beeswax, machinery, glass, porcelain, sugar, leather goods, light hardware, piece goods, paper, etc. The through rate to either terminal is $127.91 (Mex.) per ton, plus the 10 per cent exchange surtax, plus 20 cents per package frontier charge. We are informed that railway construction material is also included in this class since the failure of the French Regie in Hanoi to obtain the contract for the short railway line from Mengtze to the Ko'chieu tin mines in March last. For car load lots of Class one, or over 5 tons in one shipment, the charge is $104.03 per ton, plus 10 per cent plus frontier charge of $4.44 per car.

This bears out Mr. Anderson's closing statement concerning the freight on rails from Haiphong to the interior making the rate from $118.87 or say $55 to $58.00 gold per ton.

Class 2 includes such items of Chinese freight as native candles, ham, comestibles, beer in cases, mineral waters, mineral oils, cereals, jute fiber, Chinese sugar, matches, &c., and the rate is $104.035 plus the charges as in Class 1. In carload or lots of over 5 tons, $79.45 plus the same excess charges.

Class 3 includes tannery materials, stearine, crude oils, sesamun seed, rice, rivets, potatoes, beans, jute in bales, insulators, gavanized wire, nails, coal, briquettes, etc. Rate $79.45 per ton, plus charges as in Class 1. In carload or lots over 5 tons, $62.715 per ton, plus the surtax and frontier charge.

Class 4, spelter, cotton yarn, raw cotton in bales, undressed hides, coal in bulk, bamboos, leaf tobacco, ores, native oil, marble, building stone, native iron, pig iron, &c. Rate $62.315 per ton. In carload lots or over 5 tons, $48.46 plus the excess charges.

Class 5, is for shipments of 10 tons or over, and includes spelter in ingots or slabs at $35.00 per ton, plus 10 per cent. plus $8.88 per car frontier charge, copper in ingots or slabs $70.00 per ton, plus charges, metal for coining cash, $60.00 per ton, plus charges, &c.

Even with this classification merchants declare that it is impossible for the shipper to know where he stands, as each shipment has to be referred to the railway authorities for the determination of its classification and through rate. These are changed arbitrarily without any notification to the shippers.

The through rates quoted above are for slow freight (*petit vitesse*) and the railway company reserves the right to take any time up to 27 days for delivery, the average time being 16 days for the through run of 830 kilometers. The cararan time from Burma, is about 32 days. Fast freight (*grande vitesse*) which averages six days from Haiphong to Yunnan fu, charges from 10 to 15 per cent advance on the slow rates.

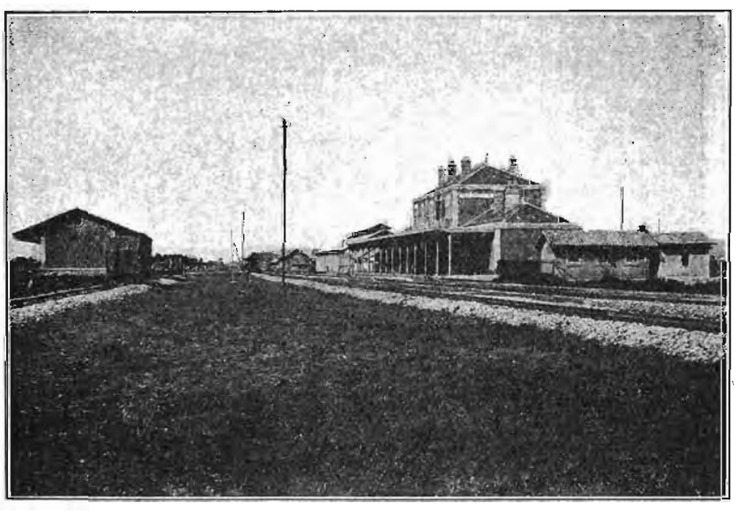
As the railway has only been open since December 1910, and the service was interrupted from May to December 1911 and again in April last, by washouts and land slides, another excess charge has been created. This is termed "Transbordment Charges" consisting of an extra tax ranging from $1.00 to $1,50 per ton, for transferring freight from one side of the break to the other, at the most about 100 yards.

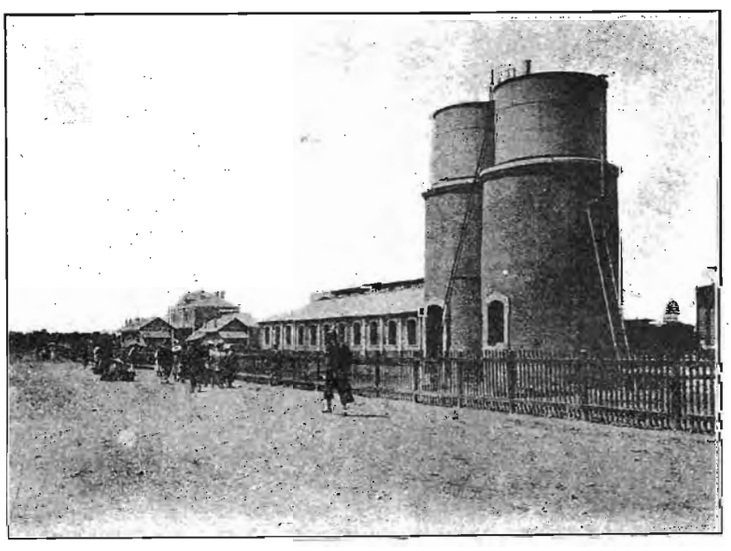
Another source of railway income arises from the fact that bank checks or compradore orders are not accepted in payment for freight anywhere on the line, except from accredited French firms, and if the freight is settled for in Yunnanfu or Haiphong an extra charge is made to cover the cost of shipping the silver to Hanoi (the head office of the railway) at first class rates.

French products are protected in many devious ways known only to the officials, and as an instance it is maintained that Hongkong refined sugar is sold at Haiphong 30 per cent cheaper than the French product, but with the addition of the 7½ per cent French transit tax on this sugar, it cannot be sold in Yunnan at prices that will allow it to compete with the French article. Cigarettes manufactured in Pootung in China, under the treaty should be allowed to pass through Tonking at a transit tax of 2 per cent, but this is not allowed by the French authorities and the full transit tax of 7½ per cent is charged, plus first class railway rates, which together with other charges come to 100 per cent of the actual value of the consignments in Yunnanfu. The imposition of such excessive rates is sufficient in itself to throttle trade and discourage shippers, but when the many surcharges are piled on and every petty annoyance possible is added to make merchants other than French feel their dependence on the system, the time must come when these foreign interests will resent the unfair treatment and request the observance of the treaties, and the rules of fair play.

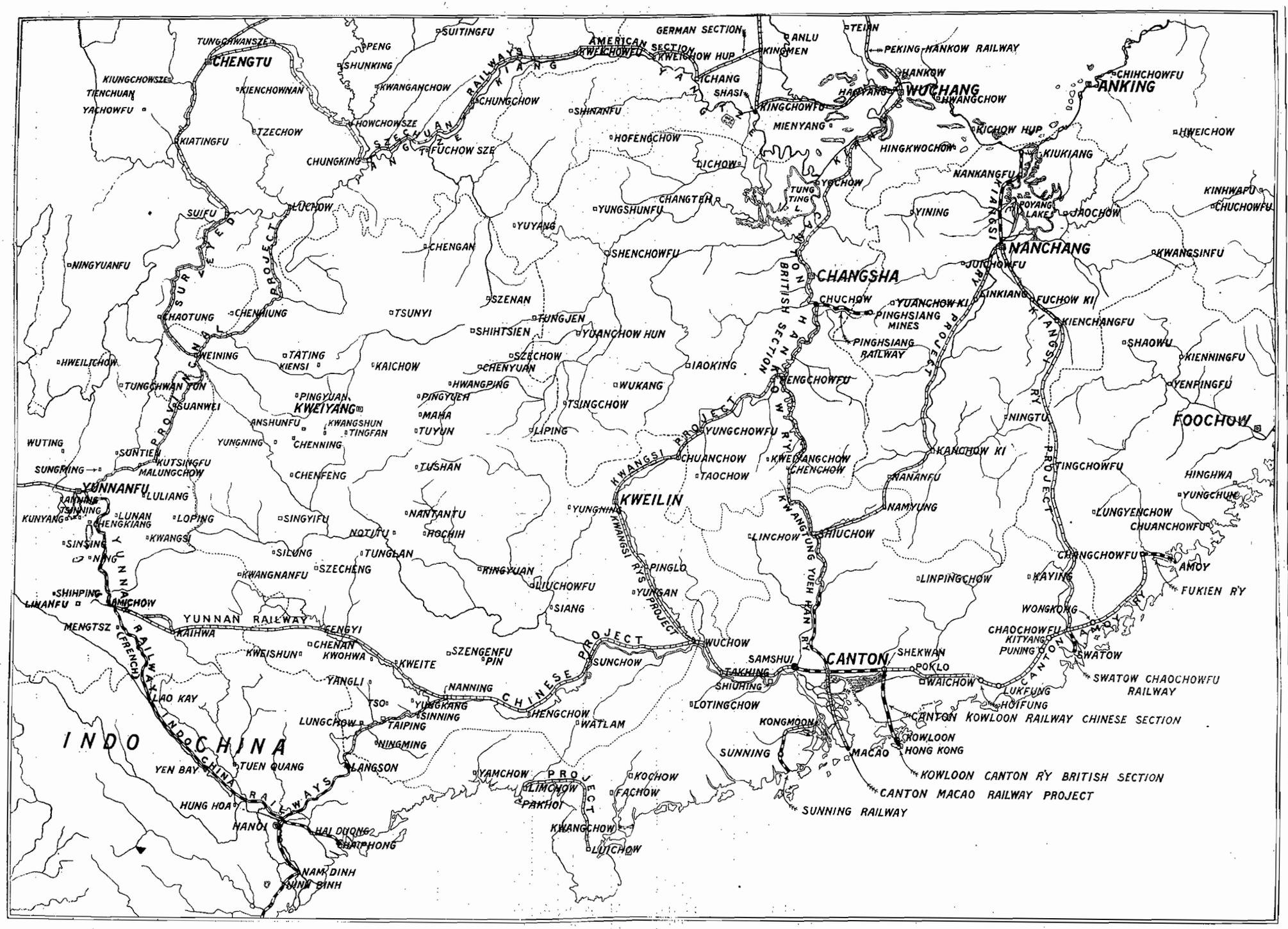
The transit trade of Indo-China is largely the transfer of the products of the Chinese provinces of Yunnan and Kwangsi to Hongkong, and of various foreign products from Hongkong to the provinces. Over 95 per cent of this entire trade inward and outward is with Hongkong, which acts as the great distributing center for all countries. So the excessive freights rates and petty and illegal charges of the French railway tend to undermine Hongkong's commercial position, striking first at British commerce and through it at other countries interested in Western China trade.

It is almost hopeless to expect action on the part of any government in behalf of its nationals trading in Yunnan beyond a perfunctory representation of facts to the French Government. China, who should expect





THE STATION AT YUNNANFU



THE FAR EASTERN REVIEW RAILWAY MAP OF SOUTH CHINA, SHOWING EXISTING AND SOME OF THE PRINCIPAL PROJECTED LINES.
DR. SUN YAT-SEN'S SCHEME IS NOT SHOWN ON THIS MAP

the greatest returns from the operation of the Yunnan line, is compelled in self-defense in order to develop the province to construct a new trunk line within her own territory at a cost of many millions. And just as soon as political conditions simmer down in China, and the country is again on its financial feet, the railway across Kwangsi to Yunnan, will be one of the first to claim the attention of the Chinese authorities. Once constructed, this line will divert the Yunnan trade that is now compelled to flow through Haiphong and over the French railway, into the ports at the West River delta, or Canton and Hongkong. In Tongking the danger of losing all by the grasping policy of the present regime is fully realized by the community at large, and the cry has already arisen for a sweeping reduction of the railway tariff charges, lowering of the transit dues, abolition of unjust taxes and the making of Haiphong into a free port.

An idea of the burdens imposed on Chinese trade passing through French territory may be gained from the following itemization of the charges levied on a trial shipment of merchandise from London to Yunnanfu. The bills of lading and invoices were signed by the London Chamber of Commerce and vised by the French Consul General at London, and shipped direct to Haiphong on a French steamer. Under treaty such shipments should be subject to the minimum tariff. The Shipment weighed 572 kilos gross and 380 kilos net and the net value landed at Haiphong was $228.40 Mexican.

Value of m'dise at Haiphong	$ 228.40
French transit due	15.79
Dock charges	.87
Disembargement (lighterage handling)	2.08
Chamber of Commerce(Statistical Dept.)	.48
Teage	.35
Tout palan	.44
Commission on transit dues	1.35
Station charges	1.20
Railway freight (572 kilos 1st Class)	77.25
Transbordment charges	1.00
Frontier charges (11 pks @ .20)	2.20
Chinese Customs	24.48
	$ 127.49
	228.40
Total cost of 380 kilos net at Yunnanfu.	$ 355.89

The passenger tariff in force over the line is as follows:—

Distances between sections.

1st section. Haiphong docks to Yenbay	248.	kilometers
2nd section Yenbay to Laokai (frontier)	142.	„
3rd section Ho-Kow, (frontier) to Amichou	221.	„
4th section. Amichou to Yunnanfu	252.	„
Total	863.	„

Passenger tariffs per kilometer.

1st section.	2nd section.	3rd sect.	4th sect.
1st C. 0.05	0.06	0.065.	0.065
2nd C. 0.035	0.040.	0.045.	0.045
3rd C. 0.02.	0.023.	0.025.	0,025.
4th C. 0.006	0.007.	0.008.	0,008.

(Fourth class is for Chinese and Annamese *only*).

25 kilos of baggage free, excess varies according to class and section from 0.17 cents per ton kilo, in 1st to 3rd classes on 1st section, and 0.10. per kilo ton on same section for baggage 4th class, to 0.30 100 kilograms, per Kilometer on the first three classes on the 3rd section.

For tickets bought on the cars, the charge is approximately 30% in advance of the above rates.

The French railway authorities defend the high tariffs as necessary to secure a fair return on the investment, and defray the high cost of repairs and maintenance. The line is built along the sides of steep canyons for miles, and each rainy season causes serious landslips which tear away the rails, destroy masonry bridges, and create general havoc, which paralyzes traffic for weeks and months. Floods inundate complete sections and have carried away several steel bridges, which have had to be replaced. At one place as shown in the illustration a landslide carried away one of the strongest masonry viaducts of the line. Many embankments are so steep that heavy and expensive masonry reinforcements are necessary. It is natural that each rainy season will bring trouble until the material has taken a slope at which it will stand. In the meanwhile the railway engineers have some serious problems to handle. In one place the slides are so frequent and the slope so steep, that they are building an artificial tunnel so that the mountain may slide down over it. At the present time we are informed that owing to the many transfers around the breaks of the line, goods can only be shipped in packages weighing 40 kilos or less.

These conditions, which make the through shipment of heavy freight impossible at the present time, may be the reason why the railway authorities have imposed the first class rates on railway material, to discourage such freight until the line is better prepared to handle it.

Official corraboration of the above state of affairs also appears in the Report of Mr. C. E. Tenant, the Commissioner of Customs at Mengtsz, dated April 15th, 1912. Mr. Tenant says.—"The causes for this diminution of trade are many; but the most important were the interruption of goods traffic on the railway, which lasted three months or so between Tonkin and Mengtsz and six months between Mengtsz and Yunnanfu, and, later on, the looting of Mengtsz by the Linanfu troops on the 3rd December. The disastrous interruption of goods traffic was the indirect consequence of the want of care on the part of the first engineers who surveyed the intended railway line. It is obvious that steep cutting in a comparatively soft soil cannot but result in gradual landslips, and when this cutting is done on a hillside—as has been done for about three-fourths of the whole length of the line from Laokai to Yünnanfu,—the whole hill surface must gradually slide down until nature has formed again a natural slope. Since the beginning of the construction of the line there have been landslips, but never so bad as during this year. They were due to the unusually early and severe rainy weather, which commenced at the beginning of May. The effects of the rains were felt not only on the railway line, but all over the province, and for three months we only heard of rains here, floods there, etc. A bridge at about Kilometre 91 was cut in two by a massive piece of rock which came down from an overhanging cliff some 300 feet up hill. Another bridge over a small canal, nearly dry in winter, in the plains of Tonkin, near Vietri, had its foundations undermined by the violence of the eddies; while practically the whole delta of Tonkin was under water."

"All native goods for this province imported *via* Tonkin, being transhipped at Hongkong—a foreign port—for want of through steamer communication between all Chinese ports (Pakhoi and Hoihow (Kiungchow) excepted) and Tonkin, are *ipso facto*, extraterritorialised, and on their re-entry into China are treated as foreign goods."

"Before closing this report, I have to refer to the transit dues, *in some cases exarbitant, which are imposed on all foreign goods in transit through Tonkin.* Were both Chinese and French Indo-China tariffs equal, there would be nothing to say; but, with the exception of opium, China is only allowed by treaty to collect duties on this land frontier according to the obsolete 1858 tariff, diminished by three-tenths on imports and fourtenths on exports, and as this 1858 tariff, fixed originally on a 5 per cent. basis, does not, on the average, represent nowadays much more than about 3 per cent. *ad valorem*, and as this very light duty is still lowered by three-tenths and four-tenths, the tariff does not come to more than 2½ per cent. *ad valorem*. This may be roughly checked by a glance at our figures. We show imports amounting to *Hk.Tls.* 4,647,996. Deducting *Hk.Tls.* 128,688, representing duty-free railway materials, there remains *Hk.Tls.* 4,519,308, on which a 5 per cent. duty would be *Hk.Tls.* 225,965; but our import duty amounted to only *Hk.Tls.* 112,395, representing just 2.5 per cent. *ad valorem*. For exports, with a total value of *Hk.Tls.* 6,750,304, a 5 per cent. duty would represent *Hk.Tls.* 337,515, while our collection, *Hk.Tls.* 89,269, is equal to only 1.3 per cent. Compared with this, we find, for instance, in Tonkin, duties on cotton yarn varying between 34.50 and 42 francs per 100 kilogrammes, or *Hk.Tls.* 6.30 to *Hk.Tls.* 7.67 per picul, the fifth of which (or Tonkin transit dues) amounts to *Hk.Tls.* 1.26 to *Hk.Tls.* 1.53 per picul, while the whole import duty in China is only *Hk.Tls.* 0.700 per picul, and with the reduction *Hk.Tls.* 0.490. The difference is still more felt on tobacco, with a 75 francs import duty, or 15 francs transit duty, per 100 kilogrammes; and it becomes prohibitive with cigars and cigarettes. with 250 francs import, or 50 francs transit, duty per 100 kilogrammes. In fact. I am informed by the representative of a large cigarette firm that he can import a case of 20,000 cigarettes, Shanghai made, *via* Canton and West River, laid down in Mengtsz, for $23 or $24, while the same case *via* Tonkin comes to $30 to $32. This speaks for itself. *That the French Government should desire to protect its own industry and that of its colonies in its own territory seems quite natural, but that it should practically stop by too high tariffs foreign goods from competing on this market seems inconsistent with the principle of equal opportunities proclaimed broadcast as regards trade in China.* If trade with this province is to be fostered, it can only be done by the reduction of these Tonkin transit charges and by cheaper railway freight."—"A survey to link up Yünnanfu with the coast by way of the West River was completed by Taotai Lo Kuo-jui, who had been specially deputed by the Board of Communications in 1910. The future line would start from Poseh, above Nanning, on the West River, reach the south-western corner of Kweichow province about Singihsien, enter Yunnan province towards Lopingchow, go north to Kütsingfu, and west to Yünnanfu. This line, if ever built, will be a formidable rival to the Yunnan-Annam Railway; and the policy of high freights and high transit duties in Tonkin will certainly account for much in its early construction."

Official and private reports all accentuate the facts above described. Excessive freight rates, illegal charges and unfair discrimination against products other than French, are closing the Door in Yunnan to European and American trade. The alleged unfair practices of Japan in Manchuria pale into insignificance before the conduct of France in Yunnan. China is weak, her despoilers are strong. What are the advocates of the Open Door and equal opportunity going to do about it?

(G. B. R.)

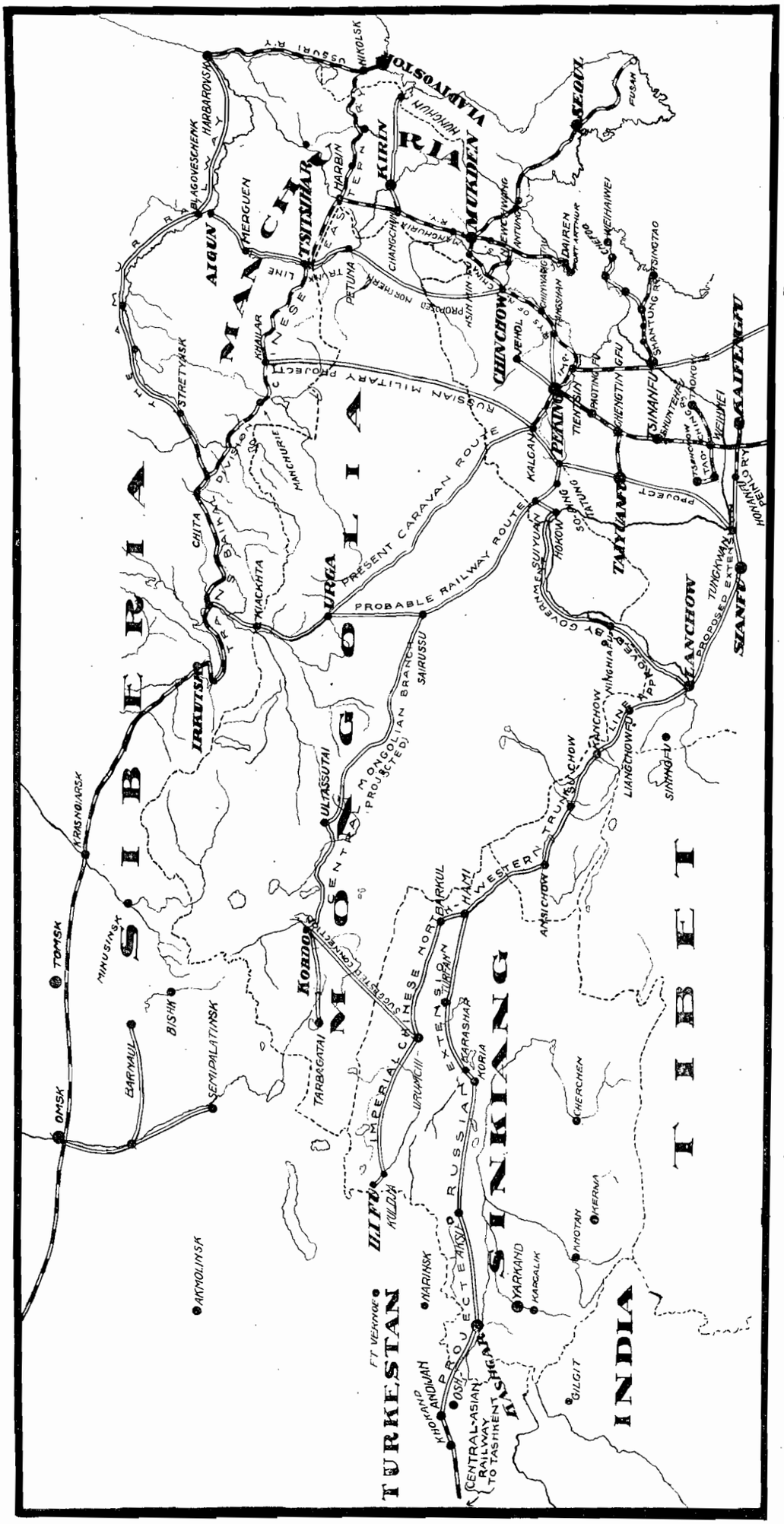
The Kiangsu Railway.—The directors of the Kiangsu Railway have petitioned the President, complaining of the unfair treatment of the British Corporation to the Railway Co., as under an agreement between the former Manchu government and the corporation, the corporation has only advanced Tls. 1,800,000, and on pleas withhold Tls. 12,000,000 which is deposited in the bank, drawing interest only at 2 per cent, and the ministry has to pay 5 per cent. on the money which causes a great loss. The directors ask that the ministry arrange some plan of work by which to draw the loan and not suffer it to remain idle. The ministry has been directed to consider and report on the subject.

The Yuet-Han Railway.—Recently a telegram was received by the directors of the Yuet-Han Railway from Szechuen stating that the people there have approved of handing over the control of the railways to the Government and asking that the shareholders in Kwantung should consider the question also, and let the Yuet-Han Railway become the property of the Government. However, the opinion at Canton, says a correspondent, has not changed since this question was mooted before, and the Cantonese are prepared to meet it with the strongest opposition. Quite a lot of trouble was caused about nine months ago by the Government's proposal to take over all the railways, and the feeling then engendered has remained, so that there is no hope of this proposal coming to anything.

THE RAPE OF MONGOLIA

MAP ILLUSTRATING RUSSIA'S ASIATIC RAILWAY PROGRAM

Lines in Operation are shown ▬▬▬; Russia's Projected Lines ▬▬▬▬; China's Projected Lines - - - - - - - - -; That part of the Trans-Siberian Railway between Omsk and Chita, to be doubled tracked by the end of this year is shown ▬▬▬; The Chinchow-Aigun Railway projected by China, and prohibited by Russia is shown ▬▬▬. Although Russia emphatically refused to acknowledge China's right to construct railways within the confines of her own territory on the grounds that they were a menace to Russia's strategic position on the Amur, the Map clearly shows that Russia has paralelled China's Mongolian border on the North and East, and with the completion of the proposed lines will completely encircle Mongolia and Sinkiang. In the above map the Trans-Mongolian Railways (Kalgan-Urga-Kiahkta and the line to Uliassutai and Kobdo) are indicated as Russian projects in accordance with the Russian official program.



MAP SHOWING CHINA'S RAILWAY PROGRAM IN MONGOLIA AND SINKIANG, (REPRINTED FROM THE FAR EASTERN REVIEW OF MARCH, 1910)

There are two projects for the construction of the railway. One revives the old and much talked of Trans-Mongolia line from one of the stations of the Trans-Baikal railway through Kiakhta and Urga to Kalgan, connecting there with the Chinese Government railway to Peking. This line would be about 1,200 Russian miles long and the most feasible and economical one to construct.

The second project or the southern line, provides for an entirely new construction. Starting from Moscow the line will reach Semipalachensk, via Suizuran, Samala and Orenburg and running eastward from Semipalachensk, taking a course parallel with north latitude 50, will reach Urga the Mongolian Capital and, traversing the Mongolian plain, to Kalgan. The construction of the line involves great difficulties and immense expense, it being necessary to develop a new route in the waste lands of the Gobi desert. It is also necessary to construct a new trunk line between Moscow and Semipalachensk utilizing a portion of the Orenburg-Tashkend Railway. That line alone extends for about 2,500 (Russian) miles, about one-third of the entire mileage between Moscow and Peking. In addition the line between Semipalachensk and Urga covers 3,000 (Russian) miles and would then have to connect with the first project from Kiakhta to Kalgan another 1,200 (Russian) miles.

It would appear from Russian press reports that American, French and German financiers are ready to construct the lines and have opened negotiations with the Russian Government to this end. Like many of the new Russian railways they are not expected to pay for many years to come, and must be constructed under a government guarantee. The Russian official railway programme includes the following lines in Asiatic Russia, which are to be built as soon as the money can be secured.

Petropavlovsk-Akmolinsk, 885 miles; Spassk-Spaskiyzovod, 440: Spaskiyzovod-Station to Mondibay, 586: Kokchetav-Kurgon 260; Orsk-Troitsk, 280: Barnaul-Urga, 1,200: branch to Kuznetsk, 106: Minusink-Otchinsk 266: Krasiniarsk, 300: Birsk-Kuztesk-Minisink, 380; connection of the Lena River with the Siberian Railway at Ust-Kutsk Station, 466 miles. It will be noted that most of these lines tighten Russia's grip in Mongolia, and strengthen her strategical position with China.

Russian opinion is not unanimous in favouring the construction of the Mongolian projects, and there are those who violently oppose the much advertised Kiakhta-Kalgan line.

It is urged by the opponents of the scheme that both the projected lines would be disadvantageous to Russia from political and economic standpoints, because the Kalgan-Urga railway would prove a channel by which Chinese emigrants, as well as Chinese troops in case of war, could be brought to North Mongolia to the very frontier of Russia, and thus would become a base for a Chinese army operating against Russia. For that reason the Chinese Government has been greatly interested in this project for a long time and has partly assisted it by the construction of the Peking-Kalgan line. The construction of either of the lines moreover would be detrimental to Russian commercial interests. The Kalgan-Urga-Kiakhta railway would kill all the Russian railways east of Baikal, and would enable Chinese and foreign goods to be brought to North Mongolia at low freight rates. As to the second line through Orenburg and Semipalachensk it would be even more disadvantageous than the former, because by this railway all passengers would go from the Far East to Europe and vice-versa, and thus it would kill the Trunk Siberian railway in this respect, because it is much shorter than the latter.

Those who hold this opinion, however; are manifestly in the minority and belong to the anti-expansion element. Russia needs Mongolia, and has taken the first step towards the annexation of the territory. There is no other interpretation to the trend of events.

The Kwangtung Section of the Yueh-Han or Canton-Hankow Railway

There is renewed activity in building the Canton-Hankow railway line northward. This line, which will connect Hongkong with central China, is operating to Lai T'ang, a small village little more than a sand heap, 67 miles from Canton. Grading and bridging up to mile 79 is practically completed, but grading between there and mile 85 is backward because of objections from natives. Bridging and grading up to mile 112 is practically complete. Work between mile 130 and mile 140 is in progress and that on the section up to 180 is being rapidly advanced.

The Kwangtung Mercantile Administration of the Yueh-Han Railway Co. (Ltd.), a corporation of merchants, was organized with the assistance of the provincial government about six years ago to take over the line as originally projected. Its capital was $40,000,000 Canton currency (at present worth about 48 cents to the Canton dollar) for constructing that portion of the great through Canton-Hankow system which lies in the Province of Kwangtung, the portions of this through system in Hupeh Province south of the Yangtze and in Hunan Province being in the control of provincial companies organized to construct the lines therein. The shares in the Kwangtung company were placed at $5 local currency each, and it was agreed, and has materially been adhered to, that only stockholders would be employed in building and operating the line. This company, under direction and more or less control of the provincial government, raised considerable money by stock subscription and placing a loan on the line already constructed. The latter was financially successful, and in spite of financial demoralization and many drawbacks trackage was considerably extended.

Plans for Completing the Line.—The disturbances attending the announcement of the Government's policy of Government ownership of trunk lines a year ago, however, stopped work upon the road entirely. The general uncertainty attending the future of railways also rendered it unwise to proceed with construction. Above all, the railway had used about all the funds available. Later the revolution came on and still later there was considerable disagreement as to administration of the line. Lack of funds has prevented general advancement during the current year.

Apparently the provincial authorities and present management of the company have determined that the stockholders shall complete the line as far as possible with the balance due on subscriptions and have decided to call for payment of a third installment on the stock. Co-operation is indicated in a letter sent by Governor General Hu Han-ming to the president of the company stating that there has been great delay in completing the railway as a result of many difficulties and urging that there be no further delay in making the call for this third stock payment. What this will net the company is doubtful. Par value of shares is $5 silver. The first installment collected in 1907 was $1 silver, which netted, including interest on capital placed in loans and other assets, $8,888,093 local currency, or more than the face value of the installment on the stock. The second installment, collected in 1909, called for $1.50 local currency per share, which netted $10,849,512 local currency instead of the $12,000,000, the full stock issued called for.

Third Installment Insufficient—Loan Planned—Financial Statement.—The proposed third installment of the subscriptions of stock called for is the remaining $2.50 local currency per share, which would net $20,000,000 local currency if the full amount were realized. Opposition to the call for the installment is serious, however, and it is believed that nothing like the full amount called for can be realized, while even the entire amount would hardly complete the work and meet all liabilities. The company, therefore, has sought loans, which doubtless can be had when things in China again become normal and the exact legal and political status of the company can be established. Its financial position at the beginning of the current year, which is believed to be substantially that of the present time, is indicated in the statement, on page 179, in local currency, of receipts and expenditures from 1907 to January, 1912:

At the time of this financial statement it was officially reported by the management that the state of the lines of the company was as follows: Open to traffic, 49.7 miles; under construction, 63.8 miles; with rails laid but still unopened to traffic, 6 miles; already surveyed and located, 60 miles; yet to be located, 30 miles; total, 209.5 miles.

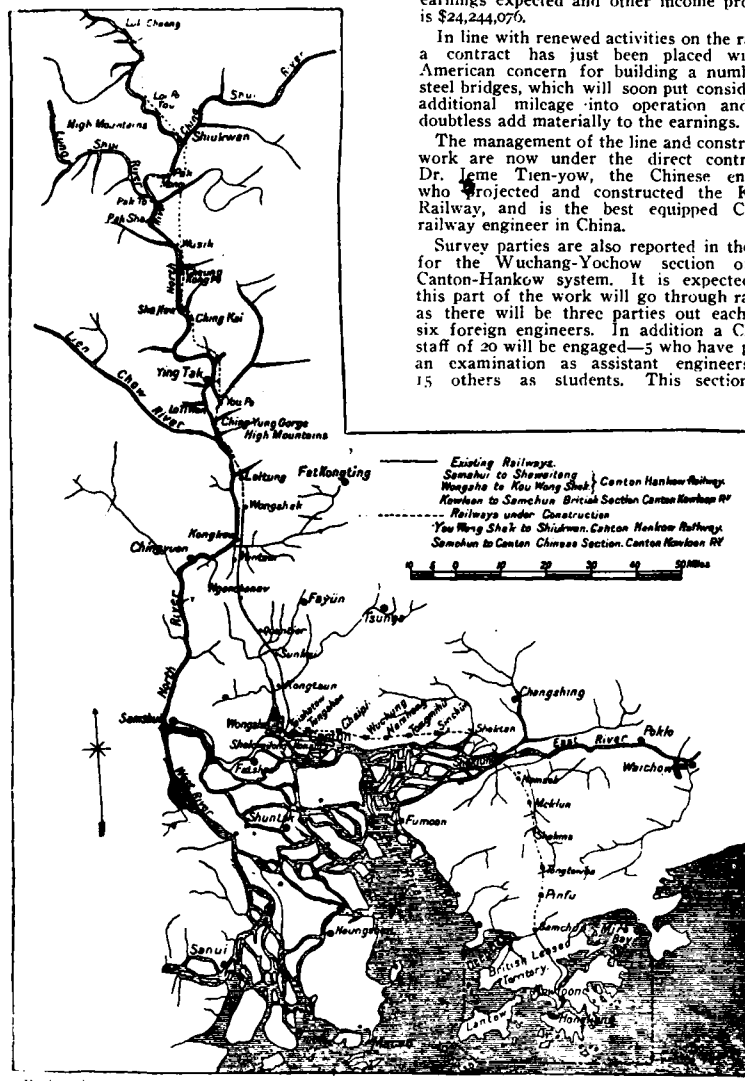
It was also estimated at the time that the entire line from Wongsha to Ping Shek could be completed within four years from 1912 at an estimated cost of $19,600,000, local currency, of which the balance on hand of $944,824, materials in stock worth $1,400,000, and receipts to be realized from traffic and interest amounting to $1,400,000 would form a part, leaving $15,855,276 still needed for the main line.

Branch Lines—Bridge Order—In addition to expenditures necessary for completing the main line, the company must necessarily construct two branch lines to connect it with the Canton-Kowloon line and the Sunning Railway extension. The first—about 4 miles long—is estimated to cost $302,400, the second branch, of about 50 miles, $8,086,400 local currency. The total amount needed for completing the system in Kwangtung Province, allowing for earnings expected and other income probable, is $24,244,076.

In line with renewed activities on the railway a contract has just been placed with an American concern for building a number of steel bridges, which will soon put considerable additional mileage into operation and will doubtless add materially to the earnings.

The management of the line and construction work are now under the direct control of Dr. Jeme Tien-yow, the Chinese engineer who projected and constructed the Kalgan Railway, and is the best equipped Chinese railway engineer in China.

Survey parties are also reported in the field for the Wuchang-Yochow section of the Canton-Hankow system. It is expected that this part of the work will go through rapidly, as there will be three parties out each with six foreign engineers. In addition a Chinese staff of 20 will be engaged—5 who have passed an examination as assistant engineers and 15 others as students. This section will



(Engineer) MAP OF THE KWANGTUNG YUEH-HAN RAILWAY

Year	Receipts	Amount	Expenditures	Amount
1907	$1 per share from call of first installment of total shares valued $ 5 each	$ 8,888,093	Payments for the resumption of this line from the American Development Co. for salaries of workmen and officials and purchase of materials, etc., from 1907 to 1911	$21,979,550
1909	$1.50 per share from call of second installment up to eighth moon of 1911	10,840,512	Accounts still outstanding	79,800
1907–1911	From traffic and interest on share capital and other sources	4,006,778	Sixth installment of resumption loan	616,000
			Miscellaneous	214,200
	Total	23,834,383	Total	22,889,550
			Balance	944,824

connect with the Kwangtung section at the border of Hunan Province. Starting these survey parties is further indication of a determination to push the railway enterprise forward. (Consul General Geo. E. Anderson, Hongkong) a fuller technical report on this railway appeared in the December, 1911, issue of this paper).

PHILIPPINE RAILROADS

The somewhat belated Report of the Philippine Commission for the fiscal year ending June 1911, has just been received from Washington. The Governor General says:—

Railroad construction has progressed steadily during the year. The Philippine Railway Co. have in a large measure completed their work. The total mileage for which immediate construction is expected is now in operation and showing handsome increases. The line in Panay has shown its peculiar importance, as the country which it traverses was almost abandoned, but is now being planted with various crops, particularly sugar.

The Manila Railroad Co., operating on the island of Luzon exclusively, is rapidly pushing the construction of its southern branches. At the present writing the line has just reached the town of Batangas, the town of Tiaong in Tayabas, and almost to the town of Magdalena in La Laguna. The sections opened up have proved unexpectedly productive, and the business of the railroad has been immediate. The Province of Batangas shipped out 10,000 tons of oranges the first year that the railroad went in. The unguaranteed section of the line is being pushed rapidly to the north and is now in the town of Aringay. Surveys have progressed rapidly, and the railroad has found a satisfactory line at reasonable grade to the city of Baguio.

In the main, the railroad situation looks encouraging, and the stimulus given to industry and the additional activity and progress among the people benefited has justified the Government in the assistance which it has given in the matter of inducing the construction of railroads.

The total kilometerage of railway lines authorized by law, with the length constructed, to be constructed, and in operation on June 30, 1911, is shown below:

Road.	Authorized.	Constructed, in operation.	Constructed, not in operation.	To be constructed.
Manila R.R. Co.	*1,327.7	620.7	51.1	*655.9
Manila Electric R. R. & Light Co.	48.7	11.2	.....	7.5
Manila Suburban Rys. Co.	19.9	9.9	.....	10.0
Tarlac Ry. Co.	20.6	20.6	.....	.....
Daet Tramway Co	7.2	7.2	.....	.....
Philippine Ry. Co.	368.6	211.9	.....	156.7
Insular Coal Co.	12.0	12.0	.....	.....

*Approximate.

Manila Railroad Company.

Construction.—During the year 80.6 kilometers of track were laid by this company, the average required to complete guaranteed lines under legislative concessions by September 12, 1918, being 90 kilometers annually.

Operation, northern lines.—On the northern lines 441.3 kilometers of main track were in operation on June 30, 1911. The results of operation for the calendar years 1909 and 1910 follow:

	1909	1910	Increase.
Average operated kilometerage for which operating results are shown	342.7	409.1	66.4
	P	P	P
Revenue from transportation	2,035,025.75	2,452,730.21	417,704.46
Revenue from operation other than transportation	12,597.95	14,857.09	2,259.14
Operating expenses	900,779.79	1,072,974.47	172,194.68
Taxes	10,238.09	20,213.28	9,975.19
Operating income	1,136,605.82	1,401,597.85	264,992.03

Miscellaneous income, including income from separately operated properties, interest on securities, loans and accounts, etc., of which no report is obtainable for 1909, increased the operating income for the year 1910 to a gross total of P1,699,110.05.

The year 1910 was unusually free from severe storms, and but few interruptions to traffic were caused by washouts.

Operation, southern lines.—The average kilometerage operated during the year 1910 on the southern lines was 111.8, and the results of operation for the calendar year follow. No report is available for the previous year:

Revenue from transportation	P201,523.30
Revenue from operation other than transportation	346.34
Revenue from outside operations	658.54
Operating expenses	134,459.02
Taxes	1,574.74
Operating income	66,494.51

Philippine Railway Co.

CONSTRUCTION.

Island of Cebu.—At the end of the fiscal year there were a few items of construction work unfinished, the majority of which were, under a ruling of the Governor General, required to be finished by August 1, 1911, two items running to October 1, 1911. No construction work has been done on the proposed line from Carcar across the island to Barili and Dumanjug.

Island of Panay.—During the year the construction forces have been engaged in completing the grade, ballasting, bridges, etc., and at the end of the year 11.4 kilometers of final ballasting remained to be done, together with the wharves at Iloilo, several water stations, and a number of miscellaneous items.

OPERATION.

Island of Cebu.—The results of operation for the fiscal years 1910 and 1911 over the 95.6 kilometers of line on Cebu follow:

	Fiscal year		Increase.
	1910	1911	
	P	P	P
Revenue from transportation	256,135.81	272,168.11	35,732.27
Revenue from operation other than transportation	1,320.56	13,606.93	12,286.37
Interest on bank balances	.....	2,072.45	2,072.45
Operating expenses	197,415.26	198,150.65	735.39
Taxes	.....	2,303.95	2,303.95
Net operating income	40,341.11	87,102.89	16,761.75

Island of Panay.—The line on this island from Iloilo to Capiz has been in construction operation since September 1, 1910, the average kilometerage under operation during the year being 110.2. In the following table the average operated kilometerage for the fiscal year 1910 is 74.55, and for the fiscal year 1911, 110.2.

	Fiscal year—		Increase.
	1910	1911	
	P	P	P
Total revenue	146,188.60	273,373.82	127,345.22
Operating expenses	111,180.43	151,420.35	60,239.92
Operating income	35,008.17	102,113.47	67,105.30

Manila Electric Railroad & Light Co.

	Fiscal year—		Increase.
	1910	1911	
Kilometerage of lines in operation	63.2	64.7	1.5
	P	P	P
Operating revenue	1,124,612.31	1,244,048.35	119,436.04
Operating expenses	606,211.34	641,839.86	35,628.52
Operating income	518,400.97	602,208.49	83,807.52

Manila Suburban Railways Co.

	Fiscal year—		Increase.
	1910	1911	
Kilometerage of lines in operation	11.6	11.6	.....
	P	P	P
Operating revenue	215,670.40	251,563.03	35,892.63
Operating expenses	123,441.22	116,348.18	*7,093.04
Operating income	92,229.18	135,214.85	42,985.67

*Decrease.

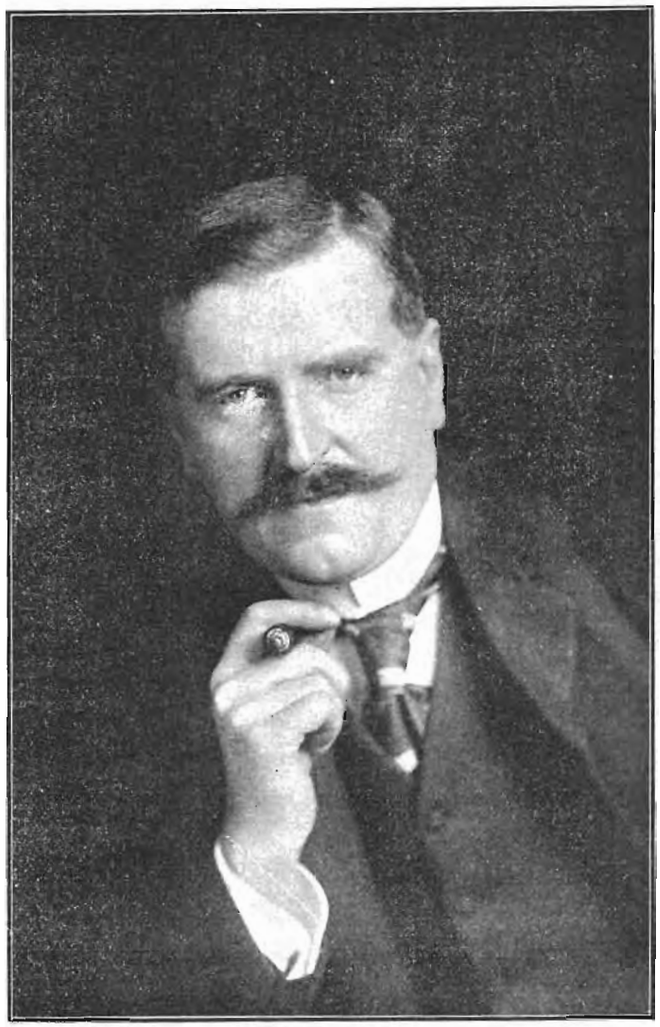
Daet Tramway Co.

The Daet Tramway Co., operating over 7.24 kilometers between Daet and Mercedes, in the Province of Ambos Camarines, reports a total revenue from passengers, freight, and mails of P17,369.19, with operating expenses, including maintenance and taxes, of P12,528.75, leaving an operating income for the year of P4,840.44. The equipment of this short line consisted of 4 passenger cars and 20 freight cars, operated by 22 bulls.

Tarlac Railway Co.

The Tarlac Railway Co., operated entirely by the use of Manila Railroad Co. equipment, under contract with that company, between the towns of Paniqui and Camiling, a distance of

misfortune or undue cost, we arranged with Mr. Spinnler, who is a Swiss railway expert and who has had charge of a good many mountain railways, to go out and report. Well, Mr. Spinnler has gone out and he has reported. He approves of the location we have selected for the railway, and I think we shall be able to secure his services to see that it is built thoroughly in accordance with the best and most up-to-date rack railway system. I do not think that next year we shall be able to report that the line is finished, but in two years' time I, myself, or whoever then is in the chair, will be able to tell you that the road is through to Baguio, that we have the line working satisfactorily, and that we have been able to do everything to meet the wishes of the Government of the Philippines. And here I should like to say that we do feel we owe the Philippine Government a great deal for the way they have consistently endeavoured to help forward all our railway construction. Only one more word in conclusion, for I am sure you would like to know what progress we have made this year with construction. Well, from January 1 to July 18 we opened for traffic practically 28 miles. Of course, there is a great deal more work done, and before the end of the year we shall quite fulfil our contract with the Government. I now beg to move that the report and accounts be adopted.



HORACE L. HIGGINS,
PRESIDENT AND GENERAL MANAGER,
MANILA RAILWAY CO., LTD.

Admiral Sir Cyprian A. G. Bridge seconded the resolution.

COMPLETION OF CONSTRUCTION

In reply to a question the Chairman said that the company had never owned the Paniqui-Camiling line; it had operated it for the owners taking a certain portion of the receipts but when it was found not to be good enough to continue the arrangement it was terminated. The company had a contract with the Philippine Commission to finish the construction work by the year 1918. So far, they were completely fulfilling their construction liabilities, and he saw no reason to fear that they would not be able to do so in the future. He would not like to prophesy as to what the receipts from their lines would be this year; for they had another six months to run before the year ended. However, the total earnings on the old part of the line—the 217 miles—and on the new system (group 3) and on the southern lines (group 4), had amounted to £262,000, as against £220,000 gross last year. With those figures before him he did not anticipate that they would do worse than they did last year, but he would not like to say how much better they might do. As he pointed out last year, the object of the board was to build up the undertaking to a position of a steady dividend-paying concern, and this was a policy which he considered to be in the best interests of the shareholders. As he had already pointed out, they did not want to pay a dividend of 2½ per cent. or 3 per cent. one year and then another year have to revert to the payment of 1 per cent. As he had also pointed out, they had big construction liability; they had certain parts of the road to build which might not prove to be as profitable as some other portions, and it was therefore necessary that the directors should proceed very carefully indeed. Not only had the directors considered the possibility of using water power, but Mr. Higgins had also considered the advisability of using electricity as motive power, though up to the present time nothing had been done.

The resolution was put to the meeting and carried unanimously.

The resolution declaring the dividend of one per cent on the preference stock was agreed to.

New Railway Bridge, India:—The Northwestern Railway bridge over the Malir River, some 12 miles from Karachi, is stated to have been condemned as unsafe. The Government is asked to sanction an expenditure of $455,000 for a new bridge capable of bearing a double track.

The Malir in the dry season contains no water, but on some occasions has a depth of 30 feet and a width of nearly 1 mile. The bridge at this point has been badly damaged by floods repeatedly, and on two occasions was practically rebuilt. The construction has been authorized and the work will be carried out under the supervision of the District Engineer of the Northwestern Railway, (Mr. A. P. Waish) whose office is at Karachi.

THE TIENTSIN-PUKOW RAILWAY

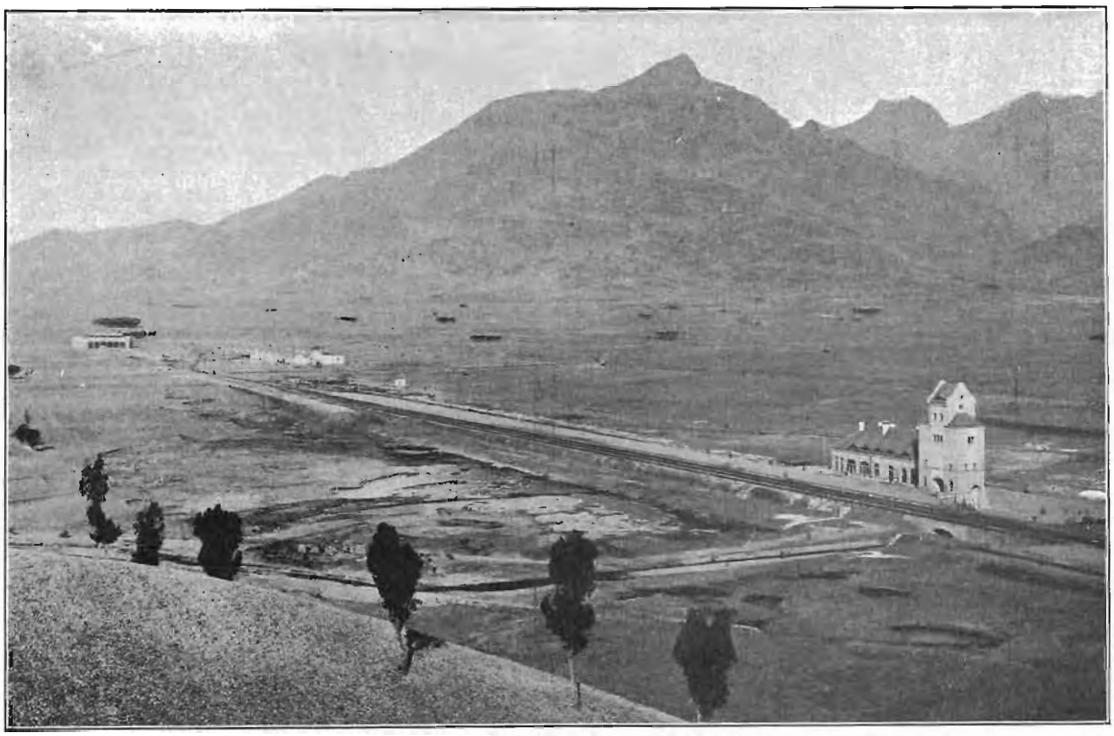
During the past year such progress has been made with the construction of the trunk line which is destined to connect Shanghai and Peking, via Pukow (on the Yangtsze River opposite Nanking) and Tientsin, that a service of trains is already available for passengers. Through connection between Pukow and Tientsin has not yet been made, the bridge over the Yellow River, near Tsinanfu, the capital of Shantung Province, being still uncompleted. The photographs which we publish on this page, and which were specially taken for the FAR EASTERN REVIEW illustrate the stage of construction reached on August 28 last. The approaches have already been completed and the central span, which is in course of building, is all that remains to be finished in order to effectively link Pukow with Peking, and, in fact, the extreme limits of all lines radiating from the Capital or its next door neighbor Tientsin.

It is hoped that by October or November the Yellow River bridge will be open for traffic, and then it may be said that through railway communication can be had between Shanghai, the metropolis of China on the Asiatic littoral, and Calais on the English Channel, or any large European port for that matter washed by the North Sea, the Atlantic, or the Mediterranean, the only break of rails of consequence being that at the Yangtsze River between Nanking and Pukow. There a passenger ferry will do service for some time, but the day will come when the cars despatched from Shanghai may be transported over on a modern train ferry, and, if it is so desired, be run to the limits of China if no further. Even now passengers may traverse the whole distance from Shanghai to Europe overland, the only objection to the journey just at the moment being the compulsory delays of one night each at Nanking, Hsuchowfu, and Tsinanfu, before Tientsin can be reached.

As is no doubt known to readers the line between Pukow in the south and Tientsin, in the north, is a stretch of miles connecting for through traffic the short lines which have for some time been open between Shanghai and Nanking (miles) on the one hand, and Tientsin and Peking (miles) on the other. The southern section of the main stretch that between Pukow and Hanchwang, on the Shantung border, and hard by the historic Grand Canal (which waterway, it may be parenthetically remarked also stretches from the Yangtsze, and from even further south in Chekiang Province, to Tientsin, connecting with Peking), was built with British capital and engineers, whilst the northern section from Hanchwang to Tientsin is the product of German capital and engineers, the former section being miles in length whilst the latter is

The present article in no sense aims at being a technical description of the line. That will be published later. It is merely a cursory report of the present progress of the work, embracing a little general information for the benefit of those desirous of knowing what travelling facilities at present exist. To accomplish that object in the easiest manner we will conduct the passenger northwards from Shanghai. Thus we embark upon the

First Stage. Leaving Shanghai on the well appointed and conducted limited express of the Shanghai-Nanking Railway at 1.5 p.m., after having purchased either a first class ticket for $, a 2nd class one for $, or a 3rd class one for $, as best suits the taste or the pocket, the traveller is borne through entrancingly interesting and intensely cultivated country until Nanking is reached at p.m. The Bridge House Hotel, newly renovated and well conducted, will afford dinner, accommodation for the night and early breakfast at reasonable rates and will see to it that baggage is aboard the launch which leaves at 6.30 a.m. next morning to cross the river for Pukow—and in this apparently trifling matter it behoves the traveller to follow the example of his baggage for if he misses the launch he will be compelled to cross the river by sampan and perhaps miss his train, although it does not leave the other side of the river



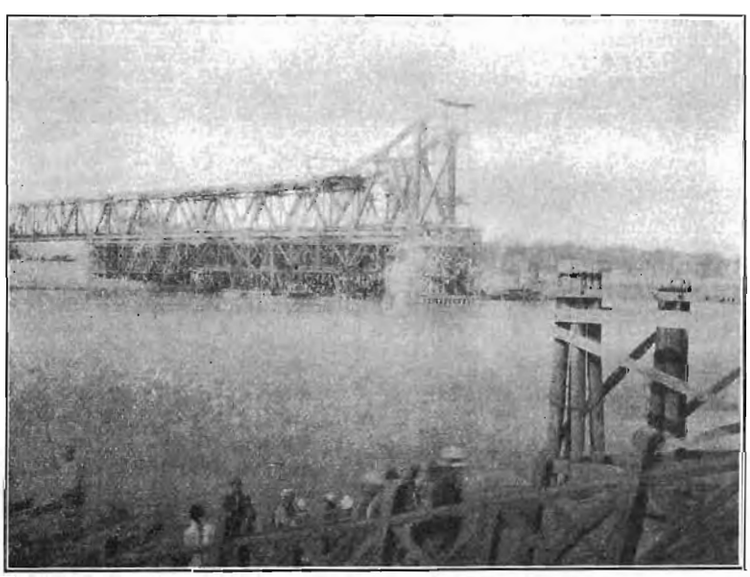
TIENTSIN-PUKOW RAILWAY, NORTHERN SECTION: THE STATION AT TAIANFU.
TAISHAN, THE SACRED MOUNTAIN IN THE BACK GROUND

until 7.30. Here, in the dark of a chilly morning, the passenger may feel disposed to wonder why on earth he should be compelled to leave Nanking at 6.30 a.m. on a ten minutes' launch journey to catch a train departing at 7.30. This deponeth sayeth not, but surmises it is one of those little anomalies which seem to be contrived the world over for the mental delectation of the critical tourist. But it is so, and whilst wondering we enter upon the

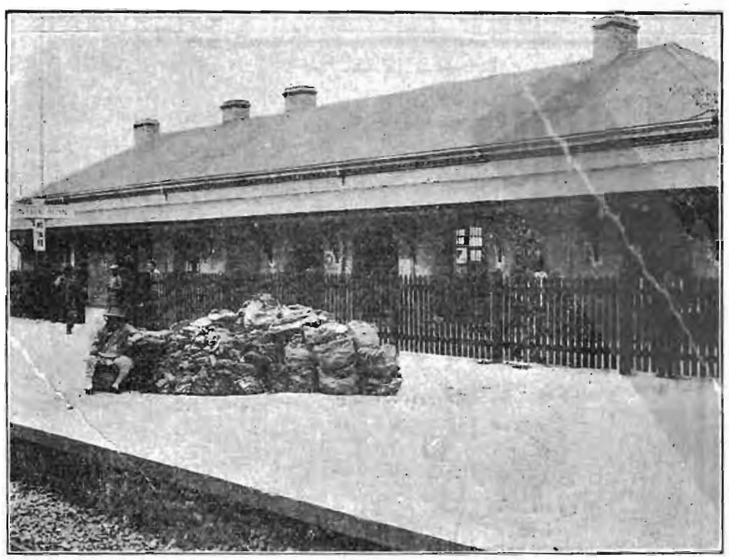
Second Stage. With the arrival of the launch on the northern bank of the great turgid stream Pukow becomes alive with coolies hustling and jostling and exhibiting Sandow strength in the apparent endeavor to rend the baggage into infinitesimal fragments. They crave, one would think, the distinction of carrying it to the train standing at the platform a few hundred yards away, but the proud innocent may be disabused for they need the money. The Pukow coolie like unto more erudite men of different hue has learnt the bitter lesson that distinction is not convertible into any know currency of any realm sufficiently magnetic to attract rice from the keeper of the stores. But having suppressed the clamant demand by paying far in excess of the value of the service rendered, and having purchased at a galvanised iron shed (for the station is not yet built) a first class ticket for Hsuchowfu, some 211 miles to the north, for $12.65, a 2nd class one for $8.50, or a 3rd class one for $4.00 the traveller may board a substantial first, second, or third class car and make himself comfortable for a journey lasting till the sun sets.

It may be here intimated for the information of the stranger that the second and third class accommodation is mostly used by the Chinese, but the second class seats can be made endurable by the use of a cushion or a folded rug. The first-class car, divided into coupés and a wide-windowed easy-chaired smoking saloon, is all that one could desire for the distance or the money, and an additional attraction is attached to it in the shape of an up-to-date dining car, whereon excellent food is served at the modest price of $1 for a meal of several courses, the menu at the same time intimating that one bottle of aerated water is given gratis with each meal!

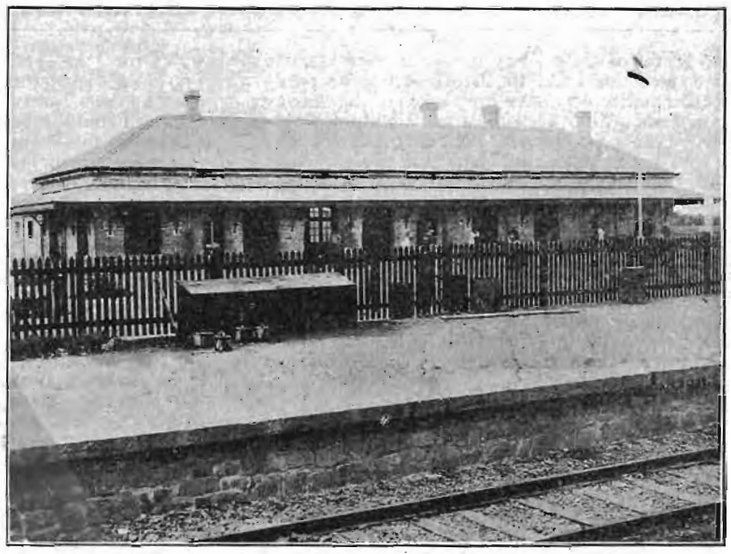
Before the traveller can make up his mind what kind of free liquid he will indulge in at his breakfast he is whirled past the well laid out work shops on the left, some distance from the station, and is carried through a cluster of low hills and undulating ground to the great plains stretching away into Shantung—cultivated to the last available inch, every mile of it. In August it was all aglow with green beans, millet, or sepia-crested kaoliang, with the monotony of still life being constantly broken by the interjection into the scheme of things of the ubiquitous donkey, or donkey cum bullock, or bullock cum two donkeys, or vice versa, at the plough or harrow. And in the midst of a Pickwickian rumination upon the strange mutability of human affairs that places the traveller in the train and the



TIENTSIN-PUKOW RAILWAY: THE YELLOW RIVER BRIDGE, SHOWING PROGRESS OF CONSTRUCTION
MAY 1912 AUGUST 28, 1912



STATION AT LIU HUAI KUAN



TIENTSIN-PUKOW RAILWAY. BRITISH OR SOUTHERN SECTION

STATION AT PENG-PU

sun-burned Chinaman, who used to hate the train, at the everlasting plough, a force armed with formidable rifles enters the car and makes demands of the passengers. One is prone to think that the days of Deadwood Dick, the famous hero of the Black Hills, have come to China, but it is not so. It is merely the collector of tickets and part of the train guard. We are still in the days of insecurity.

Gradually the train fares into the north through area known for conflicts in the recent Revolution between the retreating soldiers of the Imperialists under Chang Chun and the Revolutionists. At Ling Huai Kwan station, near the Hwai River, notorious for its disastrous floods, still stand two four point seven guns as mementoes of the strife, whilst others still remain at Hsu Chow-fu. Shortly after passing Peng-up station the Hwai River is crossed, and here the largest bridge, though not the longest, on the line is crossed. It is of steel and is 1876 feet in length there being nine spans of 200 feet each. The country in this vicinity is flat alluvial and the crops are not good. The land is too subject to inundation to permit of good returns, but the industrious Chinese plough and sow, and risk the result. This year they will get returns, but the Hwai River has not been obstreperous.

Hsu Chow-fu is reached somewhere between seven and eight o'clock, and here the change is made to the cars of the German section. The train from Tsinanfu, in the north, arrives a little earlier than the southern train and the passenger bound northwards leaves the train upon which he has travelled, after taking

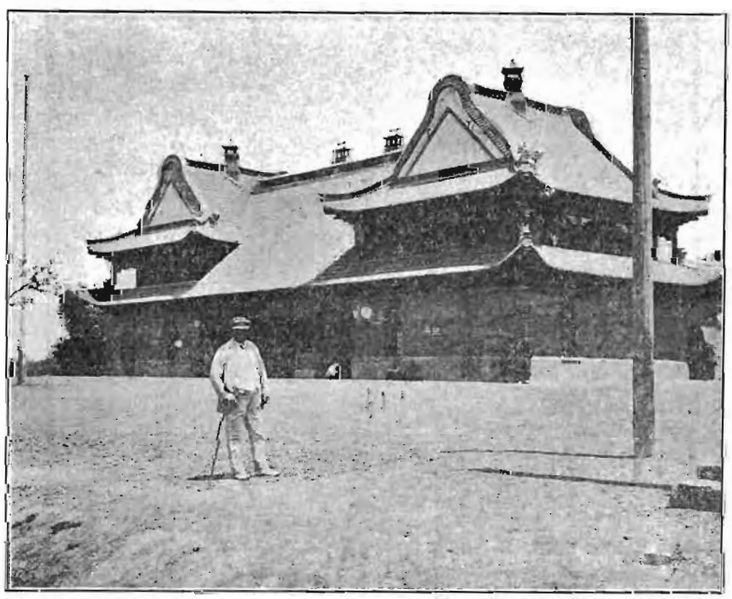
THE HWEI RIVER BRIDGE, ON SOUTHERN TIENTSIN-PUKOW RAILWAY (1,876 FEET IN LENGTH—9 SPANS OF 200 FEET)

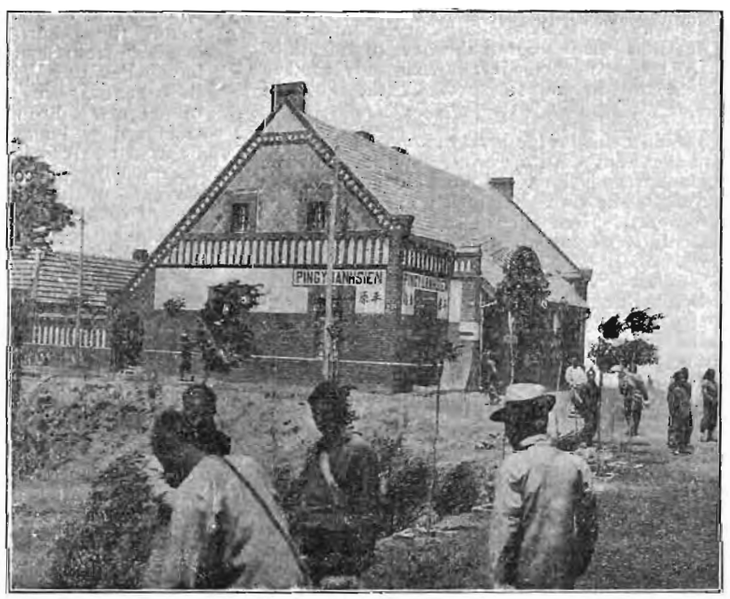
dinner, of course, and boards the German train, where he sleeps the night. The first class cars of the German section are convertible into sleepers and so are as comfortable as could be wished. The next morning the traveller enters upon the

Third Stage.—At 7 a.m. the train starts upon its 200 mile journey for Tsinan-fu, the fares being $12.30, first class: $8.20, 2nd class and $4.10 3rd class. The cars are comfortable, though there is no dining car attached, the meals being cooked in what is called a kitchen and served in the coupés, though this method is awkward if there are several passengers, since there is but sufficient table space to accommodate the necessary gastronomical equipment for one person.

The valley in which the station stands was once the bed of the Yellow River. That great stream once rolled down between the hills, but now there is nothing but cultivation, and the erstwhile rush of waters would probably have been forgotten by now were it not that the great dykes of old still stand as reminders of the other time when China's Sorrow heeded their restraining influence.

About an hour after starting out the Grand Canal is crossed by the traveller for a second time, the first crossing being just prior to arrival at Chinkiang, on the Shanghai-Nanking Railway. Near Hanchwang it is a narrow and apparently well-kept waterway, emerging from a great lake along which the line skirts for some mile, and which stretches away west as far as the eye can reach. At Hanchwang the train is in Shantung and the architectural





TYPICAL STATION BUILDINGS ON THE GERMAN SECTION OF THE TIENTSIN-PUKOW RAILWAY

features of the railway station at once attracts the attention. On the British section no particular notice may have been taken of the railway stations. They are simple brick buildings constructed to one general design, corrugated iron roof and unostentatious. On the German section the eye is attracted by a variety of design and a show of architectural adornment that is striking and lavish. The buildings are variously of stone or brick with red tiled roofs, and the scheme of design at each individual station is carried through even to the water tower and the pointsmen's huts. It is all picturesque, and the German section will stand unique in China at least for its display of talent in the designs of the railway stations.

The country traversed gradually improves from the agricultural point of view, and is all heavily cultivated, though the crops vary in condition. Nearing Tsinanfu the famous sacred mountain of Taishan is passed, and the formation of the country changes till Tsinanfu is passed. Great limestone quarries tend to make little of a miniature mountain near Tsinanfu, and passing these the capital of Shantung is reached before dark. A new station is here being built, and the railway is equipped with large yards and an abundance of space for sidings, all of which has been made the most of. Coolies from the Hotel Trendle wait on the station and the visitor can obtain excellent food and sleeping accommodation at this hostelry. The following morning he must be abroad early to catch the train for Tientsin, and here commences the

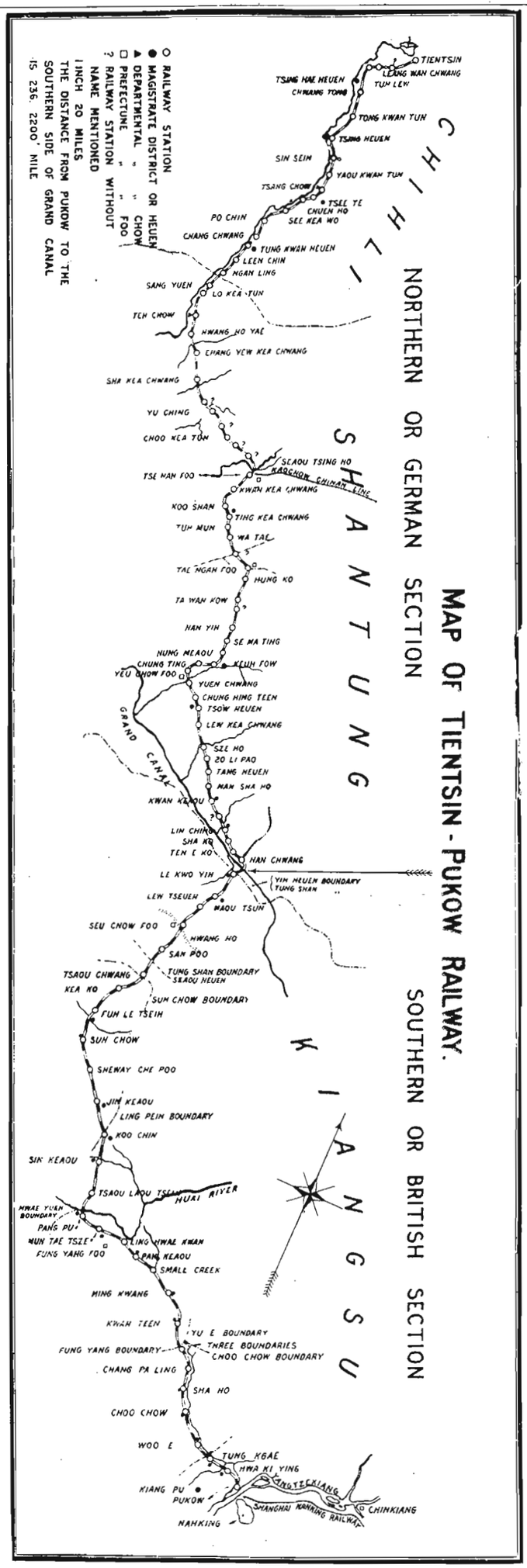
Fourth Stage.—The train for Tientsin leaves at 7.30, and the fares for the journey only vary in the matter of a few cents from those charged for the other stages. In the matter of a quarter of an hour the train arrives at the south bank of the Yellow River, and here passenger and baggage must disembark to cross the river. It must be noticed that the railway company decline to take any responsibility for passengers or their baggage in the crossing of the stream. Coolies shoulder the baggage and the passenger walks a few hundred yards to where a launch with barges is waiting. Upstream the great bridge is slowly but surely being thrown across the river and presents an imposing spectacle. The river runs strongly at this point and the launch needs all its steam to keep the laden barge beyond the power of the current. The bridge takes up all the attention of the passenger, however, and whilst he is studying it the launch completes the journey. The bridge when completed will be 4,050 feet in length and comprises nine spans of 91.5 metres each, two of 128 metres each and one, the central, of 164 metres. It is an imposing structure, and has, so far as the piers are concerned, been difficult to build. It was impossible for the engineers to find a solid bottom, and after going down some depth they were compelled to drive piles and upon those place the concrete foundations. They estimate that the silt at the bottom of the river to a depth of from two to three feet is constantly moving with the stream, so strong is the flow of water.

Whilst this bridge is more imposing than the one crossing the same river on the line from Hankow to Peking it is not so long, that bridge being some 9888 feet in length, consisting of 103 spans of 30 metres each. Workmen are busily hastening the junction of the central span of the new bridge and it is expected that the last rivet will be driven some time in October or early November. Meantime travellers will be compelled to use the ferry across the stream and suffer the inconvenience of changing.

The train from the northern bank starts for Tientsin about 9 o'clock, and passes through continuous cultivation. Kaoliang fields stretch away to the horizon in some places, and in all cases the land is under crop to the hills and even half way up them. The terminal station of this line is named Tientsin Central, but if the train is on time the passenger will do well to cross the line and wait for the train from Peking to go to the Tientsin station. From Tientsin Central to the British Concession is a long and tedious rickshaw journey. According to time table the train is due at Tientsin Central at 6.59 p.m. and that gives ample opportunity to transfer baggage and connect with the train for Tientsin, the first class fare for the extra length being fifty cents. All rates given in this article are, of course, Mexican, the local currency. If the traveller is bound for Peking he will catch the train leaving the next morning at 8.10, the first class fare being $5.20, and thus he enters upon the

Fifth Stage.—Continuing through country still under the plough, with fruit trees relieving the erstwhile monotony of cereal growth, the famed walls of Peking rise to view about 10.50 and skirting beneath the shadow of these grim enclosures of inspiring historic memorials he reaches the station near the Water Gate at 11. Another train leaves Tientsin at 3.45 p.m. and reaches Peking at 6.55. p.m.

Under the conditions herein described the journey by train from Shanghai to Tientsin is but little faster than by steamer, but when the Yellow River Bridge is completed it is the intention of the authorities to put on a service of through trains which will travel by night and thus reduce the journey to some 36 hours, making the route the shortest available from Shanghai to Peking. With the establishment of regular through trains this line is bound to develop enormously, and concurrent with that development will come the rise of the river port of Pukow. Capable of berthing deep sea steamers at its wharves it is, in the natural order of things, certain that eventually it will become a shipping port of note, and already plans have been devised for equipping it with the means to handle inward and outward cargoes of bulk. But that is another story.



time when the *Keijo-Shingishu* line is connected with the *Antung-Mukden* line in Manchuria, during the fiscal year 1911.

STREET-CAR AND LIGHT-WEIGHT RAILWAYS.

Matters concerning street car and light-weight railways were originally supervised by the Home Department of the late Korean Government and the former Japanese Residencies, but in the sequel of Annexation their supervision was transferred to the Railway Bureau attached to the Government-General. Hitherto no regulations concerning street-cars and light-weight railways being provided, the general principles contained in the regulations enforced in Japan proper are observed, under the control and supervision of the Government-General.

A concession for constructing a street railway in *Keijo* (*Seoul*) was first given to the Electric Joint Stock Company by the late Korean Government in January 1898, which concession being transferred to the Korean-American Electric Street Car Company in 1904, the line was built by the latter. This street railway, however, was sold, in August 1909, to the Japanese-Korean Gas Company for 1,700,000 *yen*, and since its transfer to this Japanese Company, many improvements were made by laying better rails, building extensions and making double tracks—all of which amounted practically to reconstruction. The total length of this street railway reached 16.3 miles at the end of 1910. In *Heijo* (*Pying-yang*), a street-car line operated by hand was built from the railway station to the native town *via* the Japanese town in 1906. As to light-weight railways in Korea, a line running between *Fusan-chin*, a suburb of the port of *Fusan*, and *Torai*, a hot-spring resort, was built with a total length of 6.23 miles by the *Fusan* Light-Weight Railway Corporation, and being bought, on February 2, by the Korean Gas and Electric Company, which was organized by the Japanese, is now maintained by the Company. In addition there are still two more light railways operated by hand power; one running between the ports of *Seishin* and *Kainei via Ranan* in North *Kwankyo* province, and the other between *Kanko* and *Seikoshin* in South *Kwankyo* province. Both of them were built by the Japanese Army during the war with Russia for army transport. After the war, these light railways became carriers of goods for the general public. The following table shows the general features of the electric car and light-weight railways existing at the end of December 1910:—

Description	Length of Rail	Size of Gage	Motive Power	No. of Passengers	Amount of Freight	Receipts from Traffic	Operating Expense	Net Profit
	mile	*feet*			*car*	*yen*	*yen*	*yen*
Electric Street Car in *Keijo*	12.88	3.06	Electric power	3,212,387	3,797	167,954	110,046	57,008
Light Railway between *Fusan* and *Torai*	6.23	2.00	Steam power	25,164	*kin* 240	2,697	2,345	352
Light Street Car in *Heijo*	1.36	2.00	Human power	92,377	—	8,913	7,506	1,407
Light Railway between *Seishin* and *Kainei via Ranan*	80.00	2.00	Human power	54,596	*ton* 5,242	63,074	60,367	3,407
Light Railway between *Kanko* and *Seikoshin*	8.25	2.00	Human power	10,909	8,566	24,775	23,523	1,252

THE PEKING-KALGAN RAILWAY AND ITS EXTENSION

In pursuance of his desire for intimate acquaintance with China's railways, and some direct knowledge with regard to their construction and maintenance, Dr. Sun Yat-sen traversed the line between Peking and Kalgan early in September. Leaving Peking on the morning of the sixth he reached Kalgan on the seventh, and had opportunity to obtain first hand knowledge of the first of China's railways to be built by Chinese engineers and be controlled by Chinese traffic managers and general staff. The Chinese are proud of this effort. Not only does the route present acute difficulties from an engineering point of view, but it also tests the efficiency of those deputed to run it. Dr. Sun was shown that the line was not only being well maintained, but that it has been brought to a profit-earning stage.

We are able to give herewith an interesting statement of figures which shows the results of working from the period of opening to date, and study of them will exhibit the reasons for the assumption in Chinese circles that properly trained Chinese are able effectively to cope with many of the difficulties which are overcome by Europeans in the management of new lines.

The line now open to traffic is 201.73 miles in length, the present terminal being at Yangkowhsien. To Kalgan the distance is 123.89 miles, and the earning capacity of the line is on the increase, according to the figures given. Between October 14, 1909, when the line was opened to regular traffic, and February 9, 1910, the loss was $326,156, with a ratio of working expenses to earnings of 168.45%. By January 29, 1911, a profit of $75,395 had been made, with a reduction in the ratio of working expenses to earnings to 94.32%. By February 12, 1912, the profit had been increased to $649,602, with the ratio of working expenses to earnings at 60.12 %, and the present year gives indications of a record, the result for the period between February 13, 1912, and June 30, 1912, being a profit of $540.623, with the ratio of working expenses to earnings standing at 42.50 %. This is an excellent showing. The capital charge on the line, including value of all assets, is set down at Taels 6,935,086, whilst that of the Mentoukou branch line is Taels 561,787. This branch line runs out from Peking a distance of some sixteen miles to a group of coal mines and transports some 500 tons per day to the capital. The freight carried from the interior on the main line is composed mainly of grain, millet, kaoliang, linseed, and wheat, whilst wool, hides, and furs also come down in increasing quantities. Pigs are also transported, and it is hoped ere long to develop traffic in horses, cattle and sheep from the great grazing grounds of Mongolia.

DR. JEME TIEN-YU, PH.D.
BUILDER OF THE KALGAN RAILWAY

The cost of working the system is greatly increased by the necessity which exists to break the trains to descend or ascend the Nankou Pass. There the grade at its steepest is one in thirty, whilst the curves have no greater radius than 600 feet. To negotiate this part of the line special locomotives are employed, Mallet engines being used on the passenger trains, and American-geared Shay locomotives for freight. The Mallet engines weigh 105 tons when loaded, and the Shay engines 100 tons. The down trains are divided at Nankou, and the sections shoved up the inclines to Kongchuang, where the train is reformed for its journey to the terminus. The up trains are similarly divided at Kongchuang and reformed at Nankou for the continuation of the journey to Peking, Mogul engines being used on the line either side of the pass. The working of the pass is extremely dangerous owing to the sharp grades and narrow curve radius, but ample provision in the shape of catch sidings is made to arrest runaways, whilst an extra force of maintenance men and track walkers is employed to keep a constant eye upon the permanent way and the cuttings and embankments. The greatest vigilance is shown in this particular section, and no opportunity is given for landslides or weakening of retaining walls. In this respect the Engineer-in-chief shows a realisation of the importance of unceasing effort in maintaining a high standard of efficiency that is unusual in Chinese. Mr. Kwang King-yang, the Engineer-in-chief, who was originally the divisional engineer in charge of the construction from Peking to Nankou, deserves high praise for the efficiency which he has secured throughout the whole length of the line.

As has been pointed out in previous issues of the FAR EASTERN REVIEW the line is built

DR. SUN YAT-SEN AND PARTY ON THE GREAT WALL OF CHINA

to standard gauge, that is 4ft. 8½ inches. The rails are 85 lbs. steel rails of Belgian make, the sleepers, except on the Pass, being Japanese, 13 being used to a 30ft. length of rail. American Oregon pine ties creosoted, are used on the Pass, and special provision is made to prevent the line slipping. The ballasting is of crushed stone from the quarries of the railway, eight inches being beneath the ties.

The most difficult portion of the line to construct was, of course, at the Nankou Pass. There the cutting was exceptionally heavy and the ascent of the gorges extremely difficult. Four tunnels had to be bored, the one on the summit being 3000 feet in length. It took four years to build this section. The longest bridge on the line is 800 feet, all bridges being steel girders on concrete piers, the largest span being a 110 foot girder. The station buildings are neat and serviceable. They are of brick, with corrugated iron roof, and are all built to one design. The platforms are faced with stone or concrete.

There is a short spur at Chi Ming Shan built to bring coal in from the Railway's mines some three miles distance. The output is about 150 tons per day. This line has been operating about four years.

MR. K. Y. KWONG

PRESENT ENGINEER-IN-CHIEF OF THE KALGAN RAILWAY AND EXTENSION

OFFICIAL REPORT PEKING-KALGAN RAILWAY

(Mentonkou Branch Line included)

Results of op ration (From the opening of the Line up to date)

Date	Particulars	Earnings detailed		Earnings & Working Expenditure		Working Results (Profit or Loss)		Ratio of Working Expenses to Earnings
		Dollars	cts.	Dollars	cts.	Dollars	cts.	
14th Oct. 1909 to 9th Feb. 1910	Passenger	120,852	750					
	Freight	345,656	140					
	Miscellaneous	9,032	695					
	Total Earnings			476,441	585			
	Total Working Expenditure			802,598	330			
	Loss (Net)					326,156	745	168.45% *
10th Feb. 1910 to 29th Jan. 1911	Passenger	427,007	530					
	Freight	875,546	370					
	Miscellaneous	27,078	500					
	Total Earnings			1,329,632	440			
	Total Working Expenditure			1,254,236	875			
	Profit (Net)					75,395	525	94.32% †
30th Jan. 1911 to 12th Feb. 1912	Passenger	417,980	500					
	Freight	1,001,835	710					
	Military Traffic	142,809	700					
	Miscellaneous	36,424	454					
	Total Earnings			1,629,050	364			
	Total Working Expenditure			979,447	444			
	Profit (Net)					649,602	920	60.12% †
13th Feb. to 30th June 1912	Passenger	183,768	150					
	Freight	819,568	800					
	Miscellaneous	30,892	144					
	Total Earnings			1,034,220	184			
	Total Working Expenditure			430,606	122			
	Profit (Net)					594,623	062	42.50% †

* Loss. † Profit.

Comparative Statement of Passenger and Freight Earnings

(From the opening of the Line up to date)

Date	Passenger Earnings		Average Monthly Passenger Earnings		Freight Earnings		Average Monthly Freight Earnings	
	Dollars	cts.	Dollars	cts.	Dollars	cts.	Dollars	cts.
14th Oct. 1909 to 9th Feb. 1910	120,852	750	30,213	187	345,656	140	86,414	035
10th Feb. 1910 to 29th Jan. 1911	427,007	530	35,583	960	875,546	370	72,962	197
30th Jan. 1911 to 12th Feb. 1912	447,980	500	34,907	570	1,001,835	710	78,065	120
13th Feb. to 30th June 1912	183,768	150	40,241	200	819,568	800	179,467	640

All amounts—Local Currency.

MR. C. T. SHAR
TRAFFIC MANAGER, PEKING-KALGAN RAILWAY

Though it was intended to go through with construction work until Tatung was reached, and thence on to Urga, the outbreak of the Revolution compelled a complete cessation of work, and resumption cannot take place until Government finances are placed in order and provision made for funds. The route has been laid out as far as Tatung-fu, an important city, destined to be the junction of the line branching away to Puchow, in Shansi, and it has been surveyed as far as Urga.

MR. KUAN MIEN-CHUN
MANAGING DIRECTOR, PEKING-KALGAN RAILWAY

Work will be continued to Tatung-fu as soon as money is available. The line will skirt the rocky hills that abound and it is expected that it will be carried out with a grade no greater than one of one per cent. There will probably be one tunnel of some 500 feet to bore, but otherwise no difficulties, except for a bridge of some 2,000 feet length (20 spans of 100 ft. steel girders on concrete pillars) at Tatung, where a river will have to be crossed at an awkward place to bring the line into the city. In their vicinity there are large coal fields, which are now being worked by the natives, mostly in a primitive way. There is some modern machinery on the ground, which was carried with tremendous difficulty over the long distance on carts, but when the line is down it is expected that a great fillip will be given to development of these coal fields.

The first stage of the projected line will end at Sui-yuan, and the matter of the Urga extension will be further considered. It is quite possible that in the near future the present branch line to Mantoukou from Peking will be continued to join the present line at Shaching station, in order to secure an easier grade. When the main line was originally built the engineer was given no choice of route, the officials desiring the nearest and cheapest route to Nankou. With the development of the line, however, the deviation will be made.

The Managing Director of the line is Mr. Kuan Mien-chun, who takes a keen interest in his work and his staff, and with his traffic manager, Mr. C. T. Shar, deserves commendation upon the successful results attained in the working of the line.

It may be incidentally mentioned that the Great Wall of China is passed through in the Nankou Pass, and the tourist is given an excellent opportunity of viewing the tremendous difficulties overcome by the ancient builders in carrying the wall up the precipitous steeps and along the crest of the mountains. To enable Dr. Sun Yat-sen to go to the wall the train was delayed some time. Despite the lateness of the hour—it was after six in the evening—the party clambered to the wall and there in the drizzling rain and mist a photograph was taken. The result is unique inasmuch as it is the first and only picture of the attainment by Dr. Sun Yat-sen of a seat on this ancient pile in the far north of the Republic.

PEKING KALGAN RAILWAY

Official Report of Capital Work

[From Lin-Chune, Feng-tai to Kalgan (sidings included).....449 Chi. lis]

Particulars	Amount	
	Taels	cts.
Land	321,668	8870
Material and Rolling Stock	3,888,817	0626
Construction Work	2,084,792	9560
Administration and Engineering Charges	288,861	3080
Telegraph Line	89,364	4270
Police	23,485	5230
Material Transportation	179,844	6740
Train Working	52,355	0310
Public Works (Hsichihmun)	5,896	3370
Total.....	6,935,086	2050

Mentoukou Branch Line

Official Report of Capital Work

[From Hsichihmun to Mentoukou .....47.4 Chi. lis]

Particulars	Amount	
	Taels	cts.
Land	45,879	0810
Material and Rolling Stock	380,740	6215
Construction Work	68,344	3680
Administration and Engineering Charges	40,091	6080
Telegraph Line	952	3080
Police	1,020	0730
Material Transportation	24,758	4660
Total.....	561,787	4255

All amounts—Local Currency.

HANYANG IRON AND STEEL WORKS

(Official Report)

The Han-yeh-ping Iron & Coal Co. (Ltd.) has furnished Consul Roger S. Greene, the following figures as to operations in the year 1911 (Chinese calendar, Jan. 30, 1911, to Feb. 17, 1912):

Pig iron.	Tons.
Total output	93,337
Shipments to:	
Hankow and other Chinese ports	9,824
Japan	58,535
United States	1,465
Australia	5,765
Saigon	40
Total	78,629

Rails.	Tons.
Total output	24,216
Sales of rails and fastenings in China	23,492
Merchant bars, sales in China	1,250

During the year 359,467 tons of iron ore were produced at the company's Tayeh iron mines. According to the Chinese customs returns, the export of iron ore and pig iron in tons, for the year 1911 (new style), were as follows:

	To foreign ports.	To Chinese ports.	Total.
Iron ore	110,500	20	110,520
Pig iron	51,300	26,128	77,428

The iron and steel works at Hanyang have been shut down since the outbreak of the revolution last October, but preparations for resuming work are well advanced, the furnaces not having been so seriously injured as expected by being abandoned while charged. The foreign experts formerly employed have all been discharged. The iron mines at Tayeh continued working throughout the fighting.

RAILWAYS

Chefoo-Weihsien Railway:—A meeting attended by upwards of 300 prominent Chinese was held at Chefoo on Sept. 6 to discuss the construction of a railway between Chefoo and Weihsien. A committee was appointed to make the necessary arrangements. It is understood, says the *China Tribune*, that the representations of a special committee of the China Railway Association, which had been dispatched there to call the attention of the local citizens, as well as Dr. Sun's speech at the capital in regard to his railway scheme, had principally to do with the summoning of this sudden meeting. The idea of connecting the two cities in question with a railway line is no novel one. Three years ago, some prominent people of Tengchow, Laichow and Chefoo got together and organized a limited partnership under the name of the Chefoo-Weihsien Railway Co. A plan was drawn up, the estimate was made out, and the work was about to be started. The scheme, however, remained unexecuted owing to the lack of necessary funds, through the unwillingness of shareholders to pay in their subscriptions. Whether or not the plan will take a tangible shape this time remains to be seen. The length of the railway is 660 *li* or nearly 330 kilometres, requiring a sum of $15,000,000 for its construction.

Toyama-Naoetsu Railway:—The Toyama-Naoetsu Railway which was to have been opened by the end of October, it is feared, will not be completed before next March, owing to the recent inundation which visited the regions. The Japanese Railway Board is now, however, concentrating its efforts upon the building of the railroad between Naoetsu and Itoigawa, which section received less damage than that of Itoigawa and Tomari. At the present rate of work it was expected that the railway between Itoigawa and Nadachi would be opened by November 3.

The Szechuen-Hankow Railway:—A Peking telegram dated September 23 states that the Szechuenese shareholders have agreed to the Central Government owning and constructing the Ichang-Kweichow section of the Szechuen-Hankow railway. The following are among the conditions agreed upon: (1) All the stations, houses, and materials for construction along the Ichang-Kweichow railway line will be turned over to the Government; (2) The funds left in the Szechuen Railway Co. will be used by the said Company for the development of other industries; (3) Should the Government see fit to choose another route than the one already decided upon, the Company will retain the right of constructing a line along the original route. The line constructed by the Company will be considered as a branch line to that constructed by the Government; (4) The Company will be responsible for all the liabilities thus far incurred.

Cebu Street Cars:—Mr. Martin M. Levering, according to the *Cablenews American* of September 24, received a cable from London capitalists agreeing to supply the money to equip the city of Cebu with an electrical street car system.

The bill for authorizing a street car system in Cebu was brought before the Philippines Assembly in 1910, but it was not until June 1911 that the franchise was granted to Senor Simplicio Rodis; at the time of the initiation of the scheme an English company had the money ready to organize a Cebu Car Company and to begin work, but the delay in getting the franchise through caused a temporary halt in the scheme as the English capitalists tired of waiting devoted the money to other propositions.

Six months ago, Mr. Martin M. Levering left for London to see what could be done to interest English capital in the matter and as a result of his work the plan has now been taken up by a group of capitalists who are putting three-quarters of a million pesos into the concern.

The chairman of the new company is Sir Frederic Fryer, former Lieut.-Governor of British Burma, and a member of the board of directors of the Rangoon tramways. Each member of the group is a man of financial prominence, and all are men who invest millions in each enterprise that appeals to them. Their advent into the commercial life of the Visayas is likely to prove one of the most important events in the commercial history of the Philippines.

S.M.R. Traffic Returns:—The South Manchuria Railway Traffic Returns for last September give Y.931,664, which is a decrease by Y.210,067 as against the corresponding period of last year. In the aggregate for the half-year from April, however, this year's increase over last year amounts to Y.588,412.

China's Provincial Railways:—The following circular, signed by H. B. M.'s Consul-General and issued to the British mercantile firms in Canton, is published in the Hongkong *Government Gazette* for general information:

"The undersigned is directed by His Majesty's Minister to inform British subjects that the Chinese Foreign Office have reaffirmed, in the case of provincial railways under commercial management, the principle laid down by the late Tsung-li Yamen, that loans contracted with foreigners are not valid unless they have been previously sanctioned by the Central Government."

Trang-Bangkok Railway.—It has been decided to open for traffic 90 kilometres (Trang Tong Song) of the Trang Division by the 1st December, 1912. At present only construction trains are running. Some, however, already take passengers and goods. The earnings are very encouraging. It is just three years ago since the work was started. Construction is being vigorously pushed on from half a dozen points between Petchaburi, Trang and Singora and the engineers are to be congratulated on the excellent progress made. By the time the line is through to Bangkok, the Trang Harbour and its approaches will have to be dredged, buoyed, and charted, so that the connecting mail steamers from Penang should have no difficulty in entering at all states of the tide.—*Siam Observer.*

The Kiangsi Railway.—Success is said to have crowned the efforts of the Far Eastern Industrial Promotion Company (To-a Kogyo Kaisha) which made repeated efforts to arrange a loan with the Kiangsi Railway and met invariably with failure. It is reported that the success is due to Mr. Kyohei Shiraiwa, director of the concern. The contract has been signed and terms are:

Amount	*Yen* 5,000,000
Rate of interest	6 per cent.
Redemption	10 years.
To remain unredeemed	16 years.

The company has paid £300,000 on account and Mr. Iyukuro Kadono, another director will, it is stated, visit Shanghai in order to turn over the rest of the money, that is £4,700,000. Arrangements are further made that the railway shall settle all its liabilities with the Industrial Bank, the Okura Gumi, Mitsui Ginko and several Chinese banks, to the amount of some £2,000,000 and that the remaining sum shall be deposited with the company at 6 per cent.—*The Far East.*

South Manchuria Railway Shops.—Work on the railway shops at Dairen was commenced in 1908, and after the work on the buildings was well under way the railway company sent a special engineer to England to purchase the necessary materials for the 13 buildings, including machinery and fittings. These materials were brought in between May, 1910, and August, 1911, in 21 steamers. The total cost of completing these shops will run close to $2,250,000. They have a capacity for repairing 27 locomotives, 36 passenger cars, and 130 freight cars. In addition to the 9 cars constructed for the Manchuria-Korea through-express line and 3 sleepers for the main line mentioned above, these shops constructed 17 electric cars for the Dairen street railway. The machinery set up during the year included four 30-ton electric cranes and 11 cranes, electric and hand, of 1 to 15 tons. The installation of 40 other cranes was about completed at the end of the year.

Six locomotives, 1 motor inspection car, 3 first-class passenger and dining cars, 3 sleepers for through traffic use with the Korean Railway, 3 first-class passenger and baggage cars, and 3 baggage and mail cars were constructed in 1911.

Hunan-Canton-Hankow Railway

Work on the Changsha-Chuchou section of the Hankow-Canton Railway proceeded in the usual leisurely manner for the first four months of 1911. In May, however, when the Imperial Edict decreeing the nationalisation of the trunk lines was promulgated, the management, anxious to be able to point to some substantial achievement as an argument against the impending foreign loan, started carrying on the work with feverish activity night and day. The result was that, with the assistance of improvised trestle bridges, they were able to run a train, though with considerable difficulty, from Chuchou to Changsha on May 28, whereupon the line was declared open for traffic. A few days later, however, the embankment collapsed some 7 miles out of Changsha, other breakdowns subsequently occurring elsewhere, and traffic was not resumed until September 10. Since that date one passenger train has been running each way daily, but no goods traffic has so far been attracted. The passenger receipts were said to average $100 a day.

At the end of the year only three steel bridges had been erected out of the 40 or more required for this section; the remainder were still temporary trestle bridges. The line is very badly laid and is far from safe, and will certainly require to be rebuilt before being fit for fast and heavy traffic. For the 33 miles between Changsha and Chuchou, with only two intermediate stops, 2¼ hours have to be allowed, as a higher speed would be dangerous. To accomplish these results, as a native paper points out, nearly 5,000,000 Changsha taels (some £625,000) have been expended, including the cost of the rolling-stock (4 locomotives, 12 passenger cars and 20 freight cars); and, as stated above, the receipts total some $100 a day.

No orders of any importance were given to foreign firms during the year, except for a railway work-shop at Changsha. The total cost came to about 12,000 Changsha taels (some £1,570). About one-third of this order went to a German firm; the balance was made up of second-hand machinery purchased in Shanghai. I am informed by an engineer who has inspected the work-shop that there is very little to show for the money expended and that the machinery is of an inferior description.

The railway has been connected at the Chuchou end with the line from P'ing-hsiang, so that the coal from the mines might be carried by rail instead of by boat as far as Changsha; but so far these hopes have not been realised, presumably owing to the bad construction of the line and to the lack of shipping facilities at this end.—(C. R.)

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BRIDGE OVER THE YELLOW RIVER ON THE NORTHERN SECTION OF THE TIENTSIN-PUKOW RAILWAY

SKETCH OF THE BRIDGE

This drawing shows the number of piers—looking from the up-stream south side of the bridge towards the north. The second pier is the only one in the stream at normal state of the river.

In a very short time the most important railway bridge in China will be completed and handed over to its owners, the Chinese Government. It has been erected over the Yellow River, near Tsinanfu, the Capital of Shantung Province, at a spot some two hundred kilometres from where the river enters the sea, and is designed as portion of the trunk line from Pukow (on the Yangtsze River, opposite Nanking) to Tientsin. The bridge was designed and has been built by the well-known German constructors, Maschinenfabrik Augsburg-Nurnberg, A.—C., Germany, and falls within the northern section of line—that built by German engineers—under Mr. J. Dorpmuller, the Engineer-in-chief.

Work on the bridge was commenced in August, 1909, and the girders joining the central span were linked together on October 9, this section having been projected from the north and south piers without scaffolding.

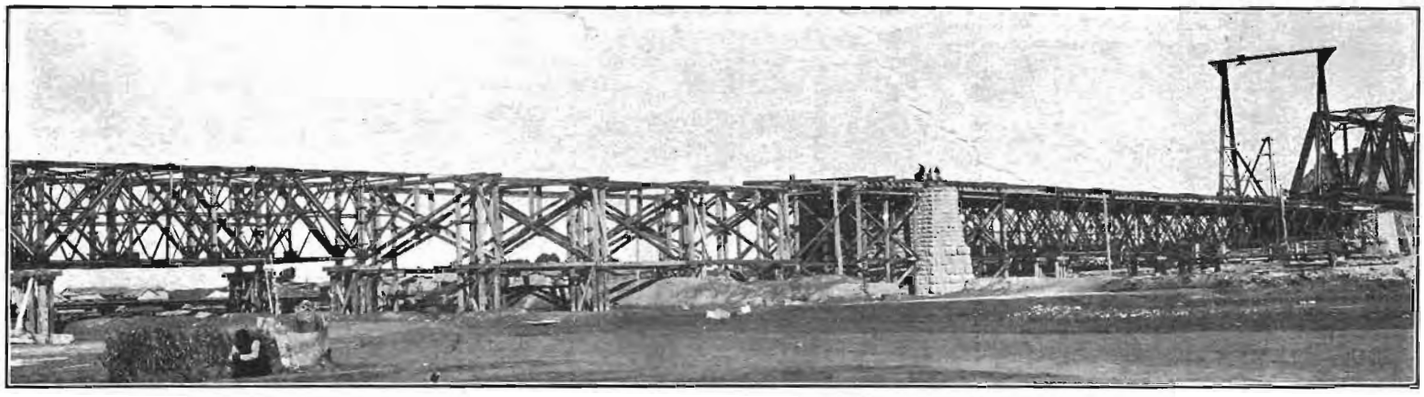
By December the bridge is expected to be completed and open to traffic. It is 1,255.2 metres (about 4,180 feet) in length, and is built on eleven piers, with abutments at the northern and southern ends. The cost of the bridge is between ten and twelve million marks.

METHOD OF ERECTION

The crane used in the erection of the cantilever section of the bridge.

At the bridge site the river has a width at low water of 400 metres, and at high water it resembles a lake, overflowing the northern bank and stretching to the great dyke some 2,200 metres distant. In this region the country is only two or three metres higher than the low water level, whereas there is a difference between the low and high water marks of five metres. Lower down the stream the actual river bed is as much as sixteen feet above the country in some places, great embankments keeping the water to the channel and delivering it to the sea. At the crossing with the Grand Canal, the Canal waters are much below the bed of the giant stream which has so well earned its title of "China's Sorrow," "The Ungovernable," and "The Scourge of the Sons of Han."

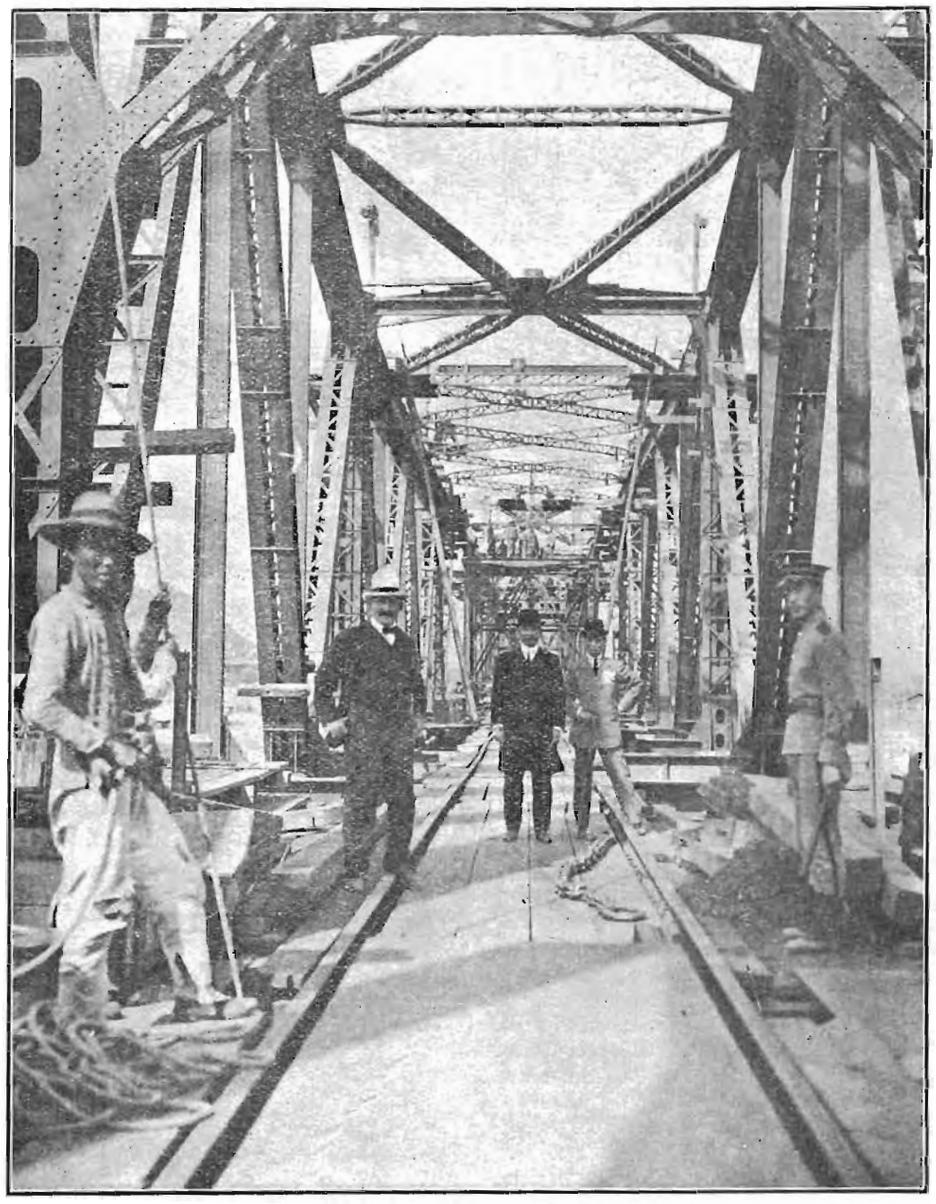
On the south side of the bridge at Tsinanfu the high water embankment is very close to the low water level of the river, only one span being necessary to reach the water. In fact only one pier is in the stream at winter level, the



SCAFFOLDING FOR THE LAND SPANS

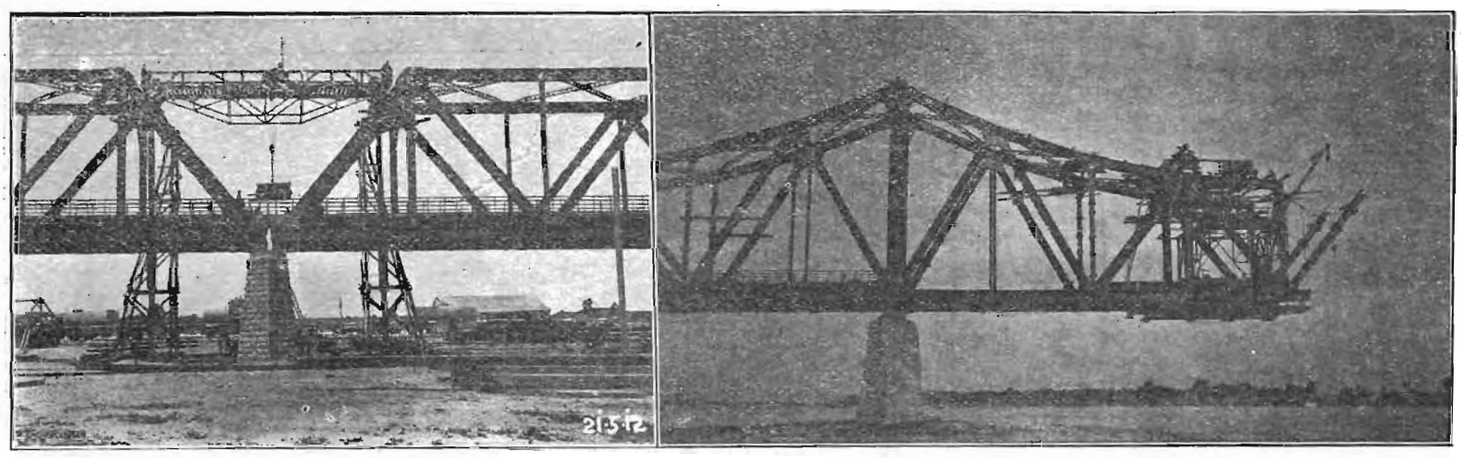
remaining ten being upon the sand flat, one on the south, and the other nine on the northern side.

The velocity of the water at the bridge, as calculated by the engineers, is from four to five metres a second at high water. It varies greatly with the seasons, and another authority gives the discharge at 12,000 cubic metres per second in the middle of the stream at flood time, it being about three times less in normal times. The vagaries of the river are so great and so treache ous that the engineers had to proceed in their calculation for the structure with caution. Their investigations showed them that the bottom of the river to a depth of two metres is constantly moving with the stream; they soon learned that any obstructions to the stream was fraught with danger, and the discovery that violent whirlpools were formed by such prevented them building the central span from scaffolding. In designing the piers, too, they had to consider the possibility of the stream changing its course. It is notorious in history for its meandering propensities. From time to time it has run to the north or south of the Shantung mountains, emptying either into the Gulf of Chihli or the Yellow Sea. It has been in its present course but about 60 years, and adopted it owing to a channel having been prepared by the less important Tsi-ho, or Taching-ho, the original bed of which was discovered during the excavation for the foundations of the piers some 17 metres below the present low water mark of the Yellow River, where was found a very tough packed clay and loess formation impossible of dissolution in running water. The ground above this clay is the deposit of the Yellow River, which carries in suspense enormous quantities of matter brought down from the great loess country in Kansu and other provinces through which it flows, giving the name to the river, and causing it to silt up so rapidly that it can only be restrained from incessant change of course by the erection and maintenance of huge dykes, which, as has been previously mentioned, confines and carries it high above the vast surrounding plains, despite the

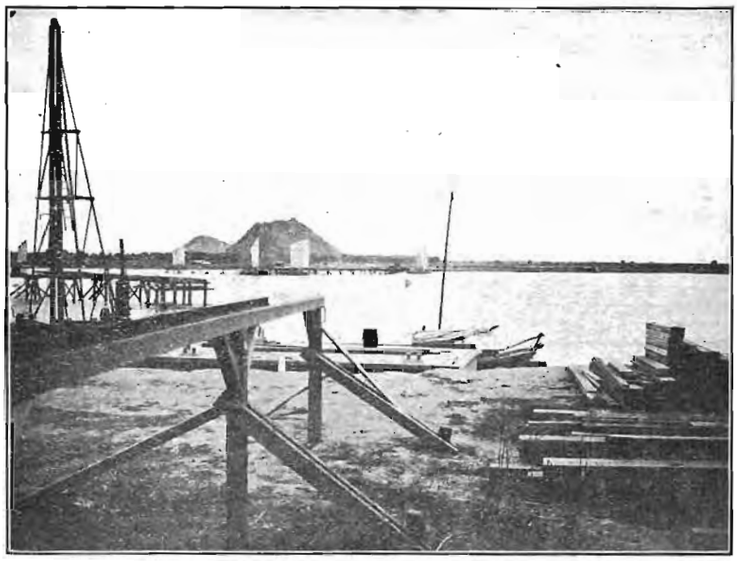


DR. SUN YAT-SEN ON THE BRIDGE

This photograph was specially taken for the FAR EASTERN REVIEW on Sept. 26. Dr. Sun Yat-sen is standing on the centre of the track; on his left is Mr. Chu Kinhow, the Associate Director of the northern section of the Tientsin-Pukow Line, whilst on the rail in the foreground is Mr. Karl Preiss, Resident Engineer of the Bridge.

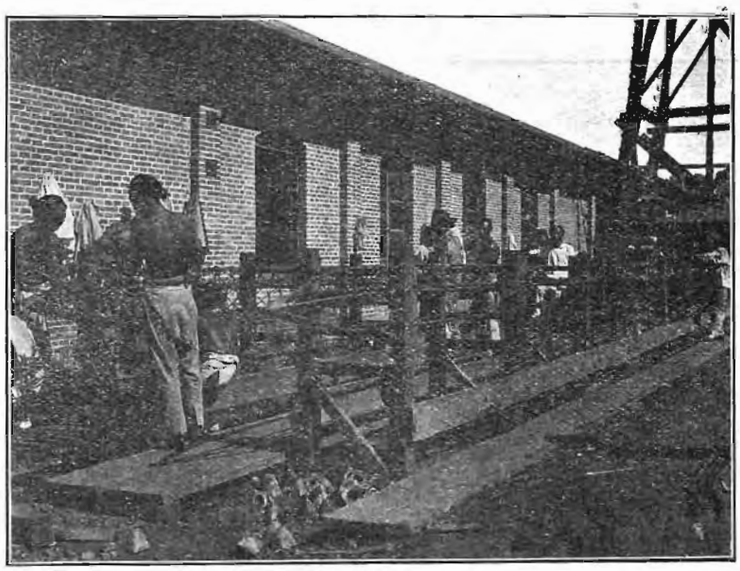


SHOWING THE METHOD OF ERECTION



IN THE EARLY STAGE

Looking towards the north bank of the river



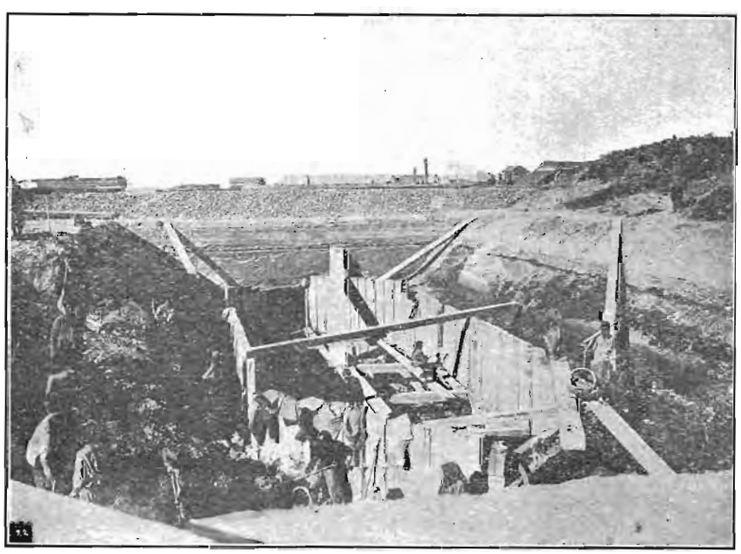
MAKING REINFORCEMENTS FOR PILES

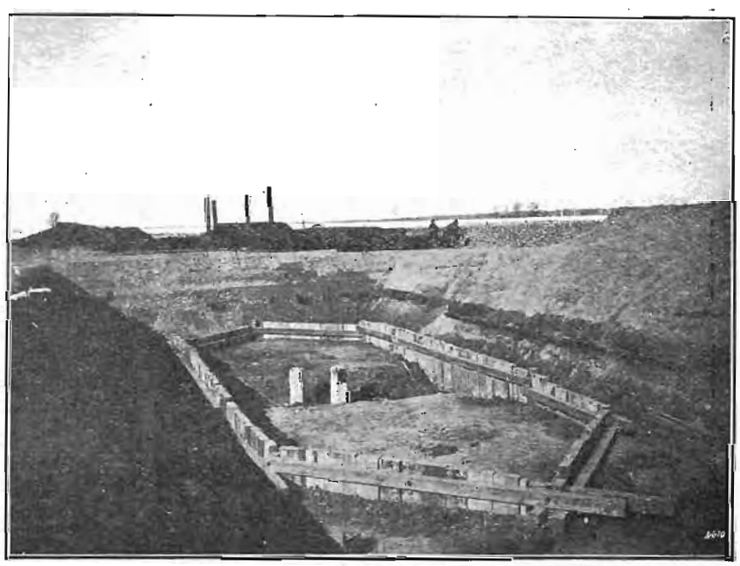
tremendous volume of water constantly flowing. The changeableness of the stream necessitated great attention being given to the pier foundations, and consequently they were sunk so deep that undermining by water is now a practical impossibility. The engineers have prepared for exceptional deviations and depths and even if changes occur, the extent of which might not now be foreseen, it is calculated that the bridge will not be affected.

In forming the foundations of the piers, except the one now in the middle of the stream, steel reinforced quinquangular concrete piles, having a superficial sectional measurement of 0.123 square metres, a length of from 15 to 17 metres, and tested to carry a load of 150 tons each, were driven, 176 being beneath the first pier on the southern side, 240 beneath the third (the second pier is without piles), 176 beneath the fourth, and from 106 to 90 beneath the balance. So many piles have been driven in fact that it is calculated that even should the earth be washed away from the concrete foundations of the piers the piles alone would carry the bridge with thorough safety to traffic. To prevent the action of the water affecting the foundations, however, aprons of stone, with piles, have been built round each pier, that guarding the pier in the centre of the stream having a length, inclusive of the pier, of 92 metres, and a width of 34 metres.

The two side abutments and the land piers, which are only touched by exceptionally high water with very little velocity, and in ordinary times are on high and dry land, have been erected on reinforced concrete piles 15 metres long. The base of the foundation of each pier is from six to seven metres below the level of the ground, and the points of the piles (which are iron sheathed) are some 13 metres below the base of the foundations, the heads of the piles being embedded in the concrete foundations about two metres. Excavations were made and timbered to enable the foundations of these piers to be constructed, and in this connection work was fairly simple. The pier in the river, and those in the immediate vicinity liable to be exposed to violent attack from the stream, were, however, more difficult. They were built to resist any onslaught, the engineers, in accordance with experience gained of the country in the course of their work and conclusions arrived at by observation, deciding to sink the foundations 17 metres under low water level. Reinforced concrete piles, 17 metres long, were driven a depth of from eight to eleven metres, and upon these was built a rammed concrete foundation.

This work was carried out with the aid of steel caissons, which were at first sunk a depth of 13 metres below low water level, so that caissions 14 metres



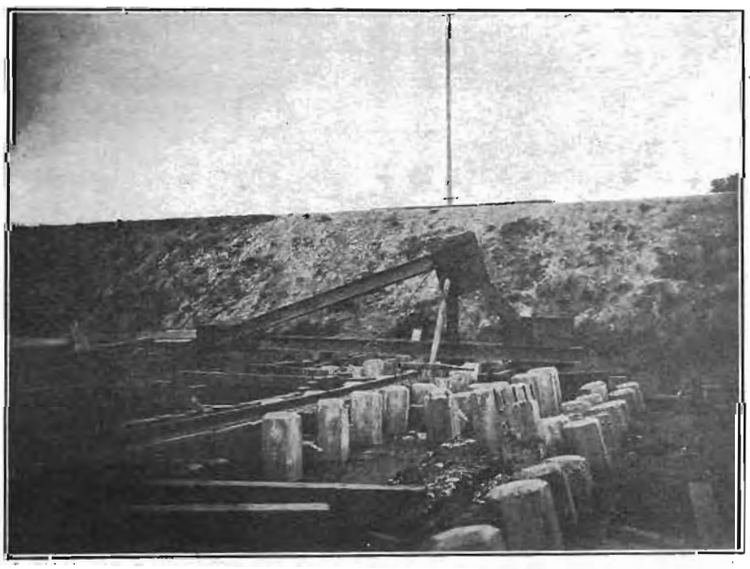


METHOD IN WHICH THE FOUNDATIONS FOR THE LAND PIERS WERE MADE

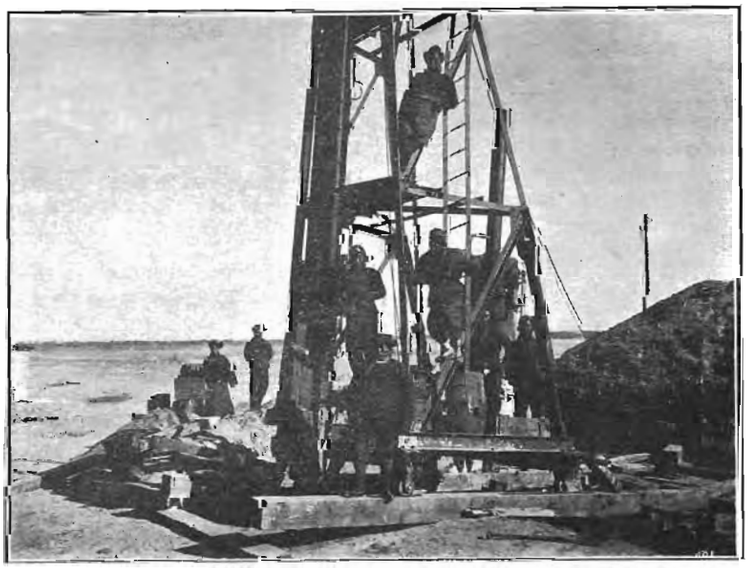
WORK ON THE ERECTION OF THE PIERS

CONSTRUCTION OF THE CANTILEVER SECTION

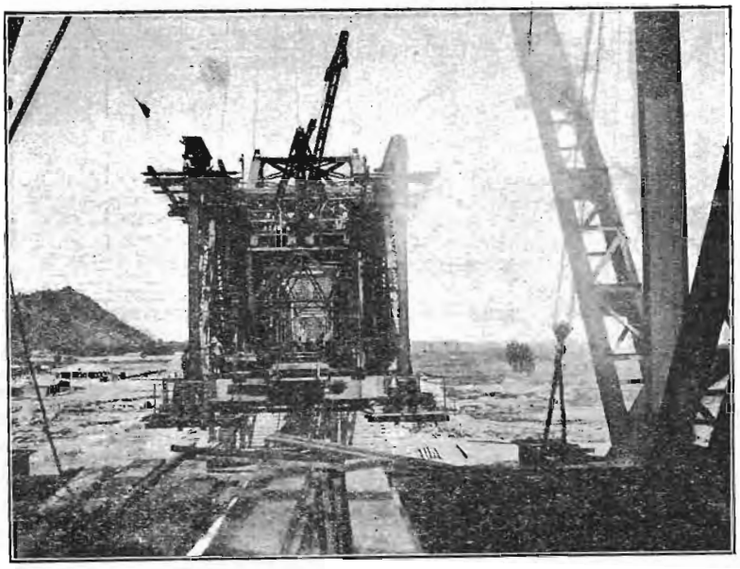
Photograph of the bridge specially taken early in October, looking from the south bank, upstream



REINFORCED CONTRETE PILING

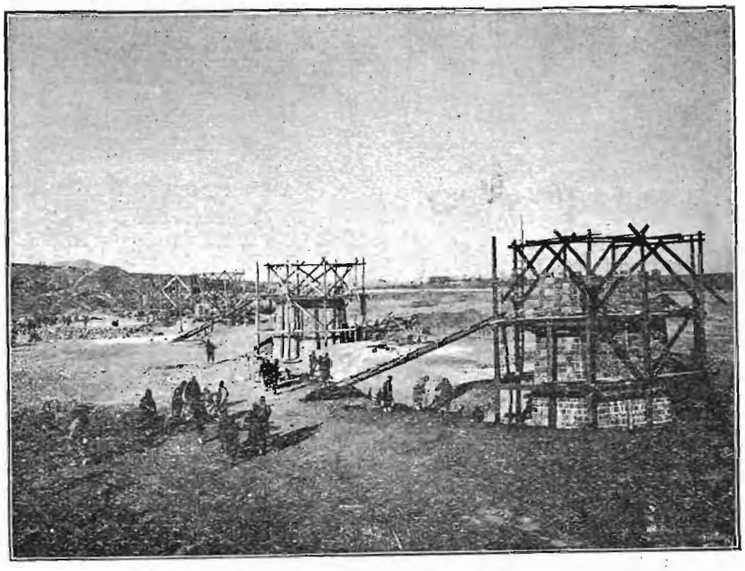


THE PILE DRIVER



BUILDING THE CANTILEVER SECTION

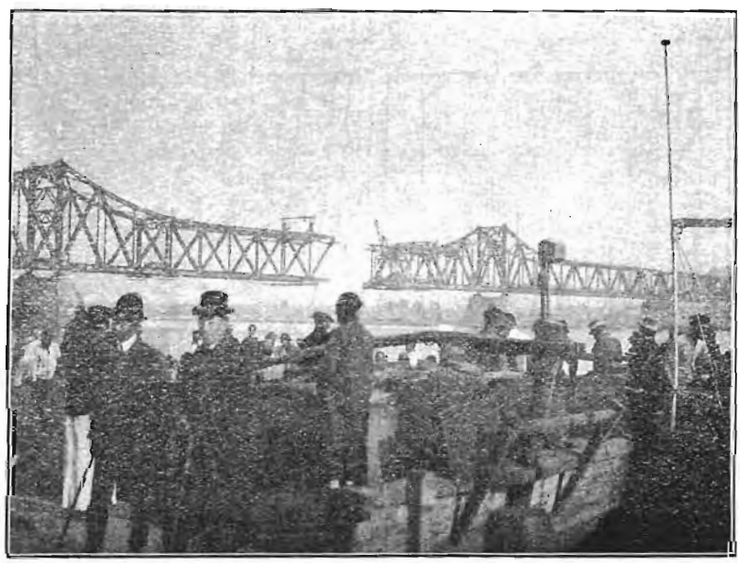
Photograph specially taken on Sept. 26 from the south side of the central span of the cantilever section



WORK ON THE LAND PIERS

high were just a little above water level. On top of the caisson a steam pile driver was erected, the ram of which had a weight of four and a half tons. With this the piles were driven, though the work was tedious and slow, the resistance of the tough loess and the increasing compression of the ground by the addition of pile after pile preventing the pile sinking but by millimetres at each stroke. After driving the piles the earth between them was removed and the caisson was sunk a further four metres, a mantle of concrete being put in. The first, third and fourth piers, counting from the south side, were built in this manner, but the second pier—which is in the stream—was constructed differently. It is the largest pier under the bridge, the foundations having a superficial measurement of 270 square metres. Piling was abandoned in favor of solid foundations, which were sunk 25 metres below low water level, five metres being in the water, and twenty in the ground beneath the river. The steel caisson and compressed air (which was also used in the building of the foundations of the three piers just referred to) were utilised. The atmospheric pressure inside the caisson varied with the height of the surrounding water, occasionally reaching 35 lbs. to the square inch; the labourers then found work difficult, and were compelled to adopt shorter shifts.

During the construction of this pier the Yellow River showed itself in all its viciousness. It rose to the greatest height experienced by the engineers just at the moment when the frame was ready for the hanging up and sinking of the caisson; later on, just when the work on the pier was about to start, it brought down an exceptional ice drift, which ended with just as exceptional a frost, the whole river being frozen from bank to bank, enabling pedestrian and cart traffic to be carried on its surface for six weeks. However, these and other unexpected tricks of the river did not find the engineers unprepared. Safeguards which had been planned from the beginning stood every test, and flood and ice drift passed without doing any harm to the work in progress.



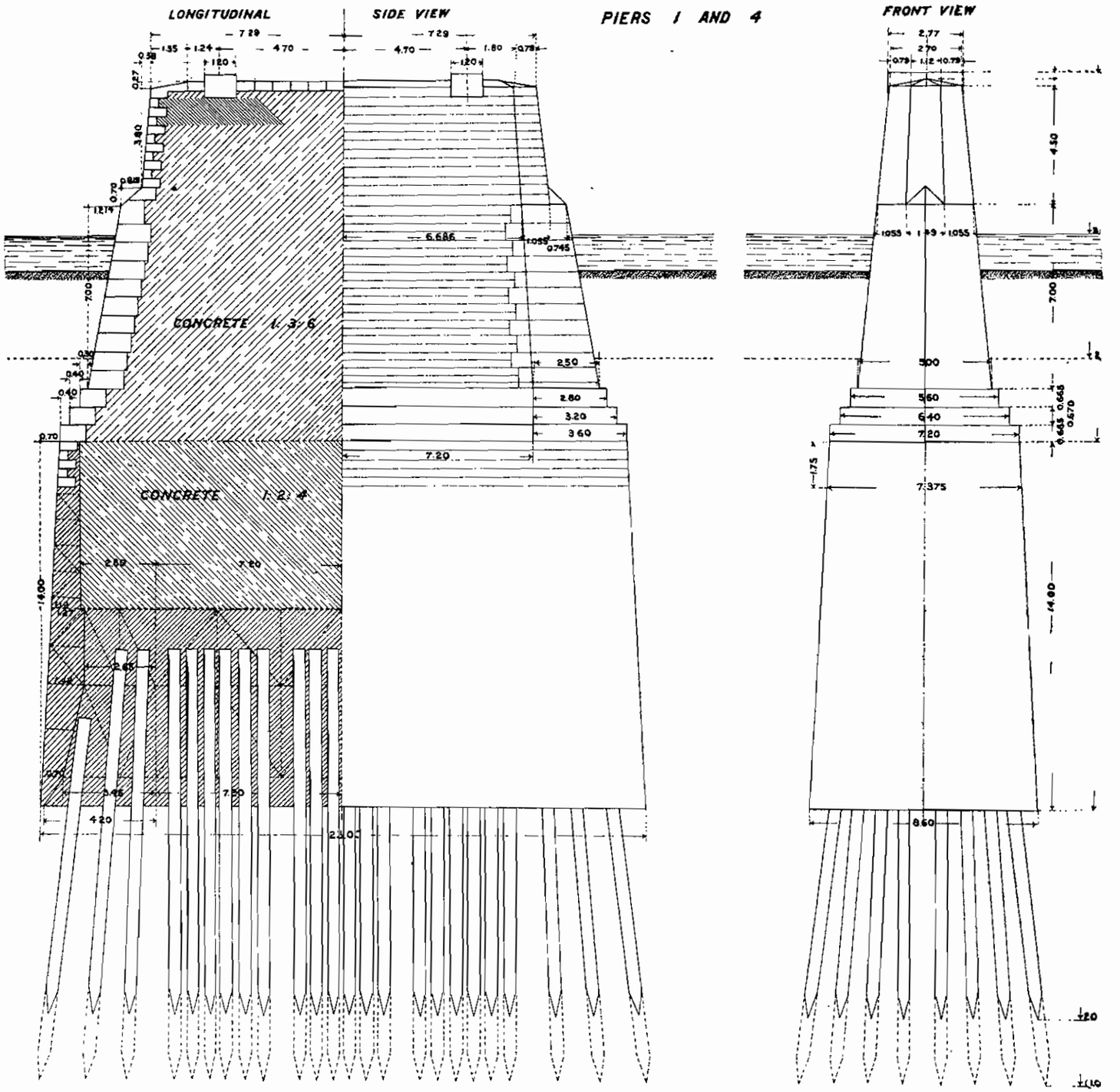
TRANSPORTATION OF PASSENGERS

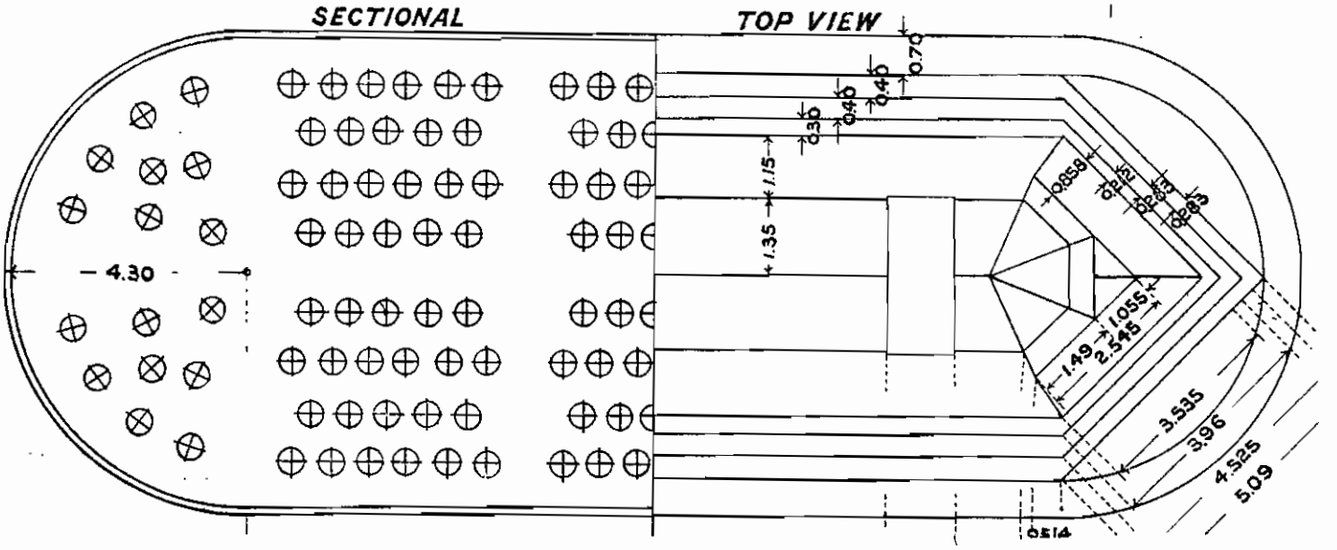
Pending the completion of the bridge passengers were transported across the river on barges. In the foreground stand Mr. Chu Kinhow, Associate Director of the Line, (on the right), and Mr. Wu Ying-fo, Chief Deputy of the Chinese Government Railways, (on the left)

As has been indicated use was made to a considerable extent in the foundations of rammed concrete, and the piers were built of the same material, faced with limestone and granite, the bedstones for the steel-work superstructure likewise being of granite. During the work of building the piers Chinese up to the number of 1,500 were employed, but the number was reduced during the erection of the steel work to between three and four hundred.

The contract for the steel work was divided with two other German bridge engineering works, and altogether 8,700 tons of girders and beams were used, whilst over 200 tons of rivets were driven at the site, pneumatic rivetting machines being used in this work.

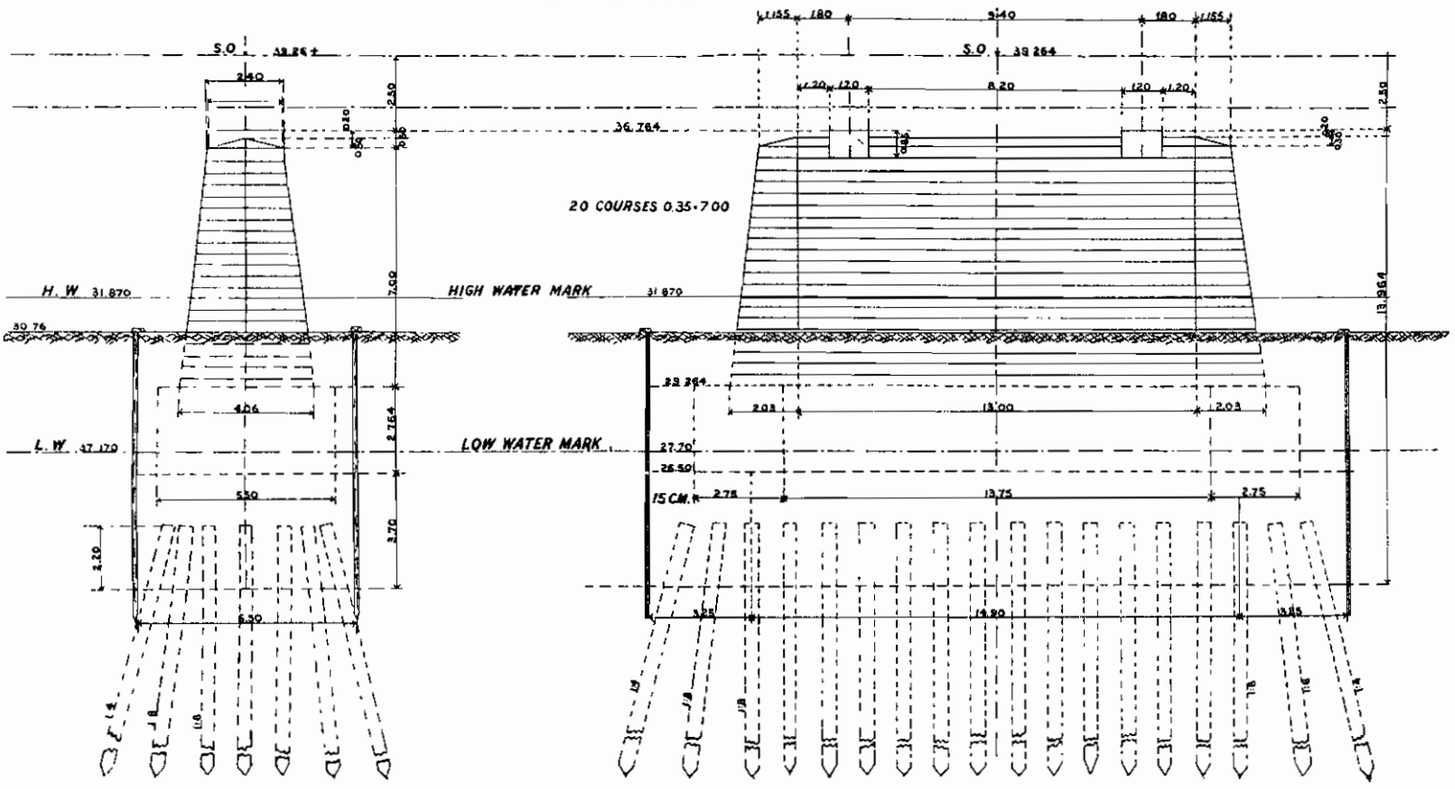
As mentioned above the total length between the south and north abutments is 1,255.2 metres, or 4,180 feet, and consists of the river bridge proper, of three spans—the two side spans being 128.1 metres (about 427 feet) and a central span 164.7 metres (about 557 feet)—and nine land spans 91.5 metres (about 305 feet) each. Of the latter one is situated on the south bank and the remainder on the north. As the sketch indicates the bridge consists of twelve spans of mild steel "through" lattice girders, the land spans taking the form of Pratt trusses, whilst the three central spans over the waterway are a combination of cantilever and Pratt truss, the latter in the central span having a length of 109.8 metres (about 366 feet).

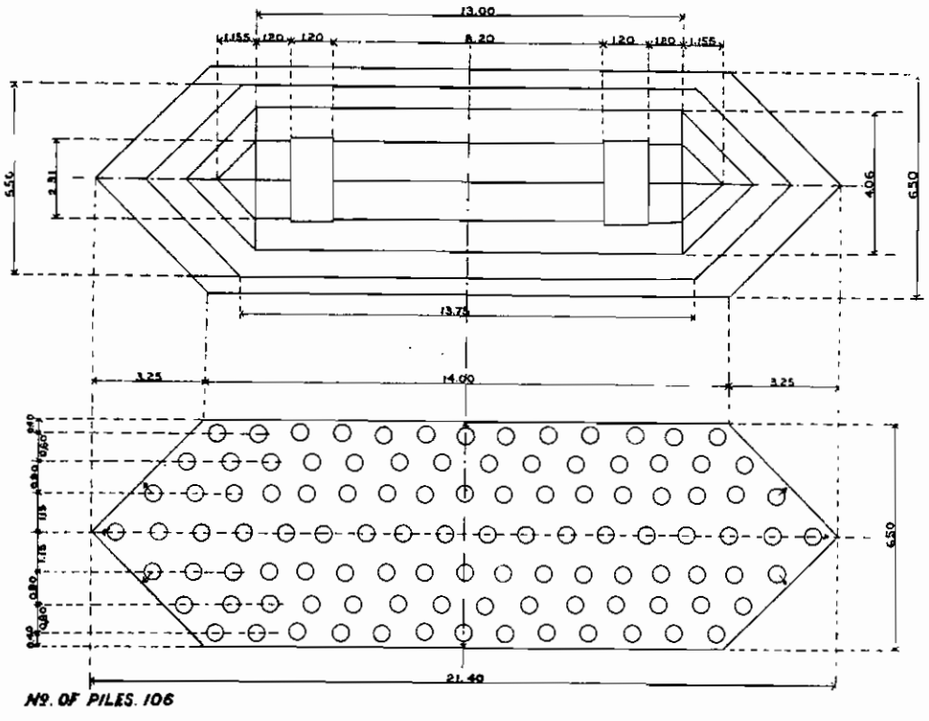

LONGITUDINAL
SIDE VIEW
PIERS 1 AND 4
FRONT VIEW
CONCRETE 1:3:6
CONCRETE 1:2:4
7.29
4.70
1.80
6.686
2.50
2.80
3.20
3.60
7.20
2.77
2.70
4.50
5.00
5.60
6.40
7.20
7.375
14.00
8.60
4.20
23.00


SECTIONAL
TOP VIEW
4.30
0.70
0.40
0.30
1.15
1.35
1.055
1.49
2.545
3.535
3.96
4.525
5.09

PIER Nº. 6

SCALE 1 - 100.

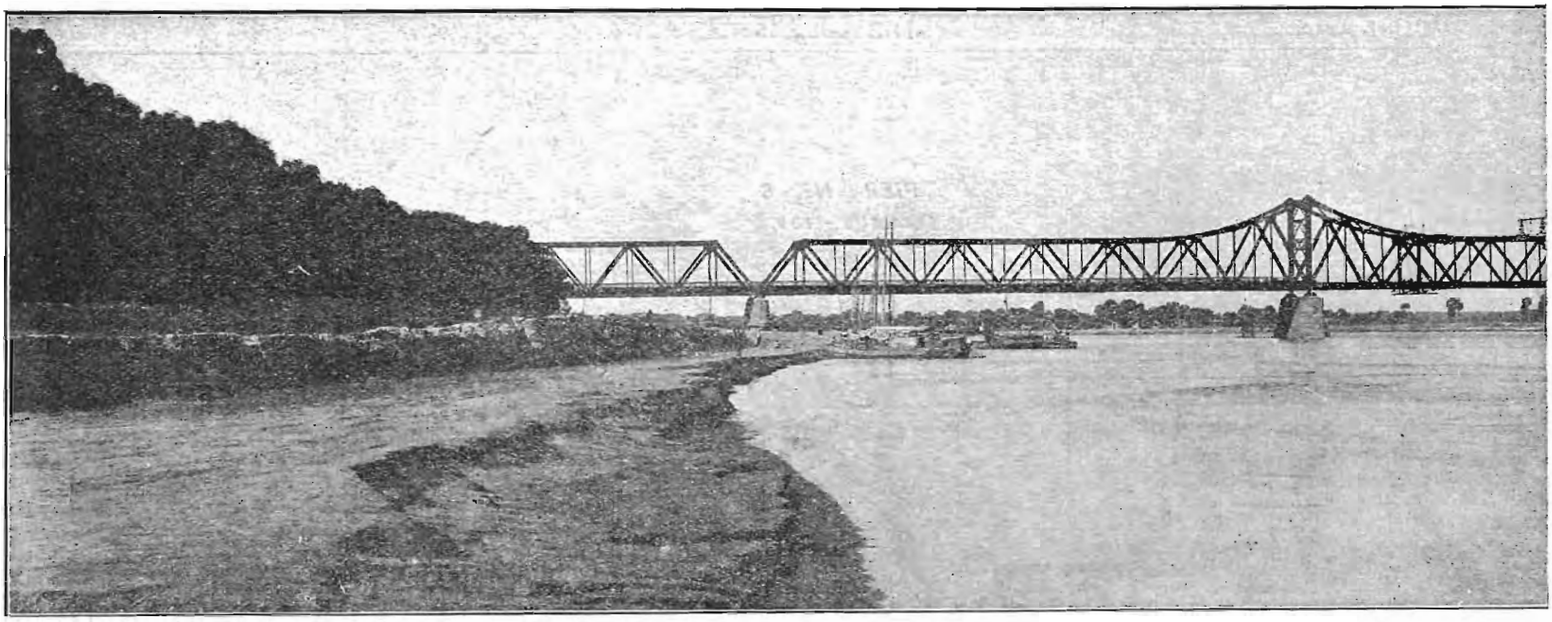




Nº. OF PILES. 106

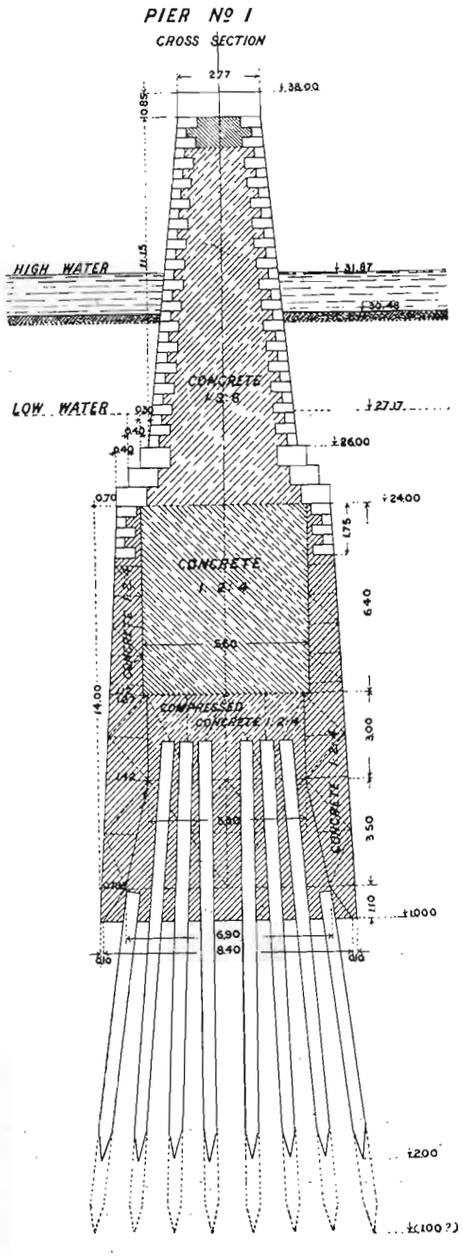
Pier Foundation Plans of the Yellow River Bridge

Tientsin-Pukow Railway Northern Section



PHOTOGRAPH OF THE

This photograph was specially taken after the junction of the cantilever section and is a view of the bridge from the down-stream south



The track of the centre span is absolutely horizontal, the rail level being 13.5 metres (about 45 feet) above low water level. The land spans on each side for the three main spans fall towards the abutments at a gradient of one in 150 metres.

The designing of the steel superstructure presented a few uncommon difficulties. The engineers were called upon to complete a single track bridge which could be converted with a minimum of cost into a double track one. Therefore the minimum width between the main trusses was fixed at 9.4 metres (about 31 ft. 4 in.), the cross girders were constructed to carry a double track, and whilst the main span was built only sufficiently strong for a single track it has been so arranged that in the event of traffic increasing justifying a doubling of the line the main girders may easily be reinforced without the necessity of interrupting traffic other than to lay the two sets of rails, the reinforcement being the erection of extra girders outside and attached to the existing ones. But many years are liable to elapse before a double track will be called for. The gauge of the line is, of course, the standard one of 1.435 metres (4ft. 8½ in.) and the present track is laid along the centre of the bridge, on both sides being a passage way for pedestrians each 1.75 metres wide. In the event of a duplication of the track these would be removed to the outside of the superstructure, and be carried on steel brackets.

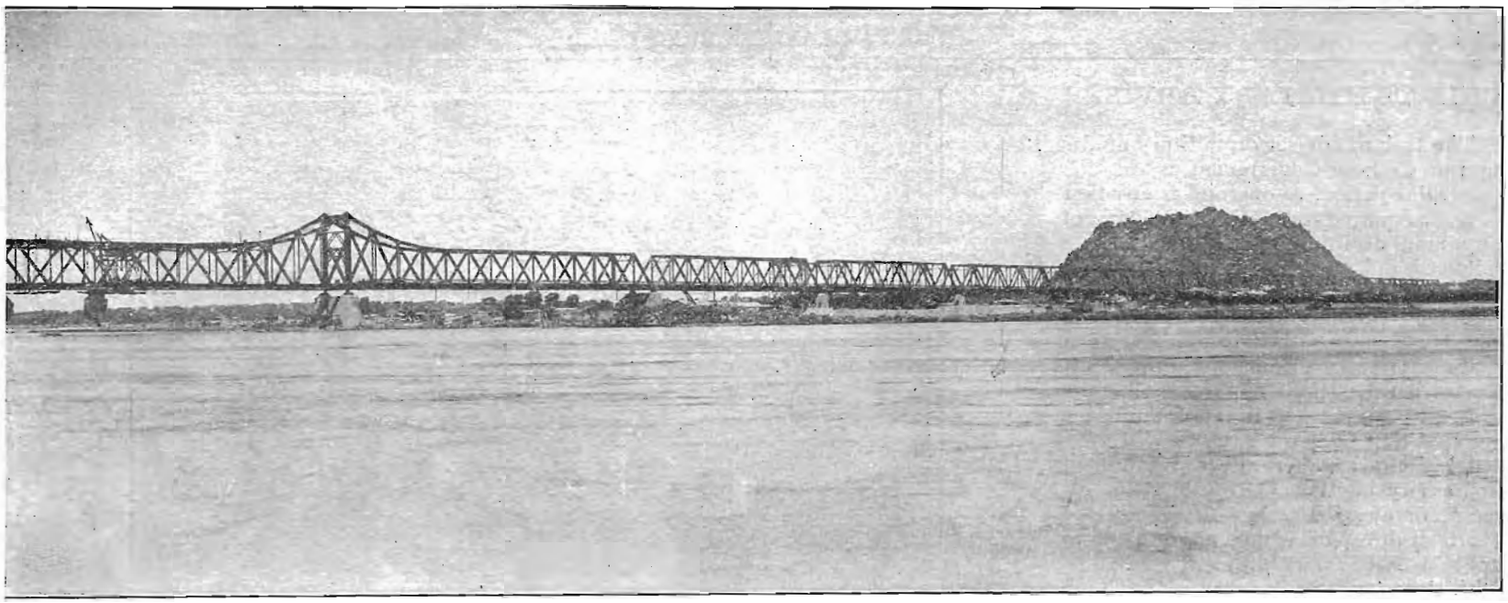
For the calculation of the steel structure the scheme of loads was as follows: The train load on which the calculations for the design were based consists of four locomotives coupled followed by a train weighing 5 tons per metre run (roughly two tons per foot run). The dimensions and weights of the locomotives are as follow: Two leading locomotives 17 metres in length (55 ft. 9 in.) weight 138 tons, greatest axle load 16.3 tons; two following locomotives 18.6 metres in length (60 ft.), weight 149 tons, greatest axle load 20.3 tons.

The erection the land spans, as well as the two side spans of the cantilever section was carried out with the aid of fixed falsework, whilst the central span over the waterway was built out from the south and northern sides without scaffolding. The latter method was adopted owing to the swiftness of the current rendering scaffolding impossible.

Electric cranes were employed throughout the work, and in the handling of the steel-work the European engineers (of whom there were originally fifteen, but in the latter stages only seven) found the Chinese particularly skilful, and their work was at all times satisfactory. The Resident Bridge Engineer is Mr. Karl Preiss, who was born in Mintz, Germany. He commenced his engineering training in 1887 with the firm he now represents, the designers and builders of the bridge. The assistant Engineer is Mr. H. Pluckham.

It is interesting to note that the builders recently were successful in the competition for designs for a bridge over Sydney Harbour, as well as for a bridge at Calcutta, the latter being a steel swing bridge on pontoons. They have also constructed bridges in Africa and South America, though this one across the Yellow River is the largest they have so far built.

Only a few weeks stand between the present stage and completion of this work, which can rank among the foremost bridges of the world, and the best reward for the engineers and those who have helped in the construction is the recognition of their fellow engineers.



COMPLETED BRIDGE

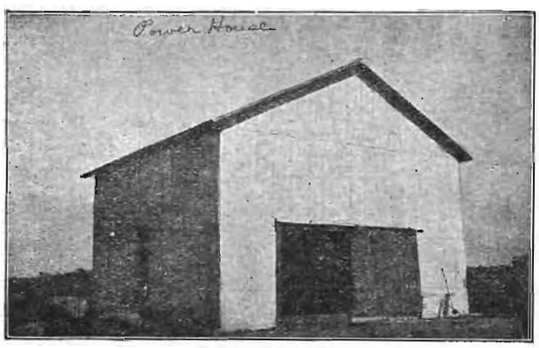
bank, looking towards the north. It splendidly illustrates the imposing structure, and shows clearly the limits of the stream at low water

HIGH VOLTAGE ELECTRIC EQUIPMENT ON THE PLANTATION

By J. F. Ahern

One of the installations which illustrates how closely the planter and farmer keeps in touch with, and turns to his profit, the use of modern machinery, is a pumping outfit operating on the 1,700 acre rice plantation of Floyd Williams, Ellis, La., near Crowley.

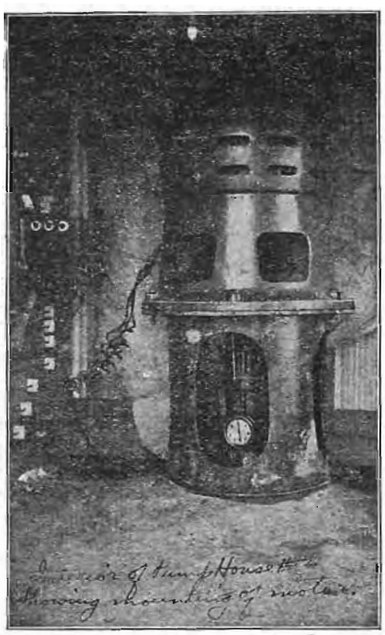
The prime-mover is a Fairbanks-Morse 200



H.P. Four Cylinder, Four cycle, Quick Start, Slow Speed Oil Engine running on low grade oils, direct connected on same cast iron base to Fairbanks-Morse 170 K. V. A., 2,300 Volt, 3 phase, 60 Cycle Alternator, with Exciter and Switch-board.

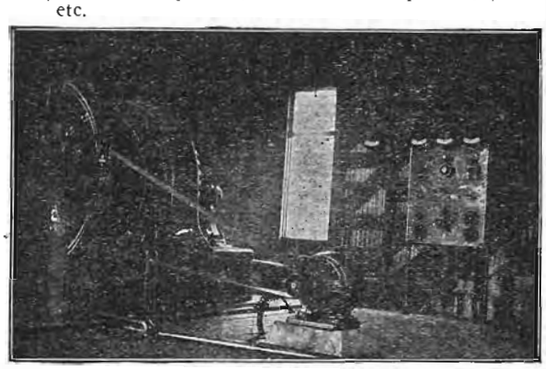
The generating set provides current for operating three 75 H.P. Fairbanks-Morse Vertical Squirrel Cage 2,200 Volt Motors direct connected to Vertical Centrifugal Pumps. One Pump is located at the power house, the second three quarters of a mile away, and the third a half mile further, or one and one quarter miles from the power house.

The current is transmitted over private pole line on Mr. Williams property at 2,300 Volts without transformers, excepting a small transformer at each pump house which provides 110 volt circuits for lighting the pump houses.



Each motor is connected by coupling to centrifugal pumps throwing 10 in. streams. The water stands in the wells from 40 to 60 ft. below the surface, each pump discharging from 3,000 to 4,000 gallons of water per minute. Each well supplies about 250 acres. The illustrations herewith show the generating unit, power house, transmission line, pumps and pump houses. The equipment was sold and installed by Fairbanks, Morse & Co., No. 608 Magazine St., New Orleans, La., and the installation has proven eminently successful in every way, Low grade oils from Louisiana and Texas Refineries operate the engine, and the economy shown has been considerably better than the manufacturer's claims.

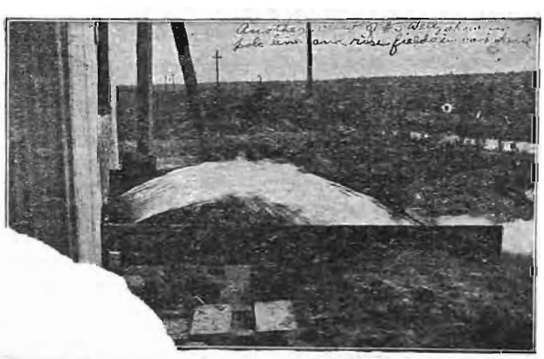
Provisions were made so that additional generating units, as well as motors and pumps can be added in future if wanted, without materially adding to the cost of attendance. The electrically driven pumps replaced steam driven outfits, which required at least one attendant at each pump. The present arrangement allows for locating the wells and pumps at the most convenient point for the rice fields flooded regardless of such conditions as good roads or easy access for coal transportation, etc.

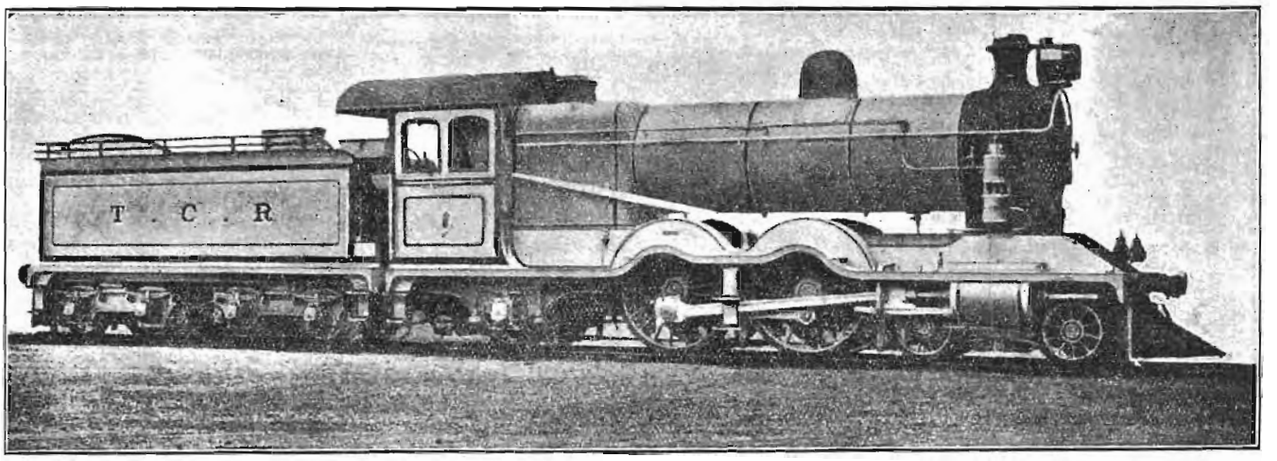


SWITCH BOARD

The electrically driven pump fits into the rice irrigating problem very nicely, as a well that is pumped 65 to 75 twenty-four hour days per season has considerable sand and sediment drawn from it, and in a few years the pump and column sink and get out of line. A belted vertical pump is hard to keep in line under these conditions as the belt will not stay on when out of line while the electrically driven vertical pump with motor mounted on the frame overcomes this difficulty.

When a well ceases delivering water, a new one can be sunk nearby, and the pump and motor easily moved without having to move an engine, boiler and smokestack. Furthermore the operating of the pumps can be manipulated to suit the water supply, that is one pump can be stopped in one field and another started in another field, without additional prime mover capacity.





ATLANTIC TYPE EXPRESS LOCOMOTIVE FOR THE CHINESE GOVERNMENT RAILWAYS.

An engine has recently been built by Kerr, Stuart and Co., Limited, for the Tao-Ching Railway, in China, or, more exactly, for the Taokou-Ching-hua lines of the Chinese Government Railways. This engine, which was constructed to the design and specification of Mr. Donald Fraser, the Locomotive Superintendent of the line, includes more than the usual number of novelties, as will be seen from the following list of particulars. The engine and tender loaded weigh 120 tons. The following are its leading particulars:—

Cylinders—
- Diameter of cylinders .. 19in.
- Stroke of pistons .. .. 2ft.
- Cast iron piston valves, outside admission, diameter 8in.
- Width of steam ports .. 1⅜in.
- Distance apart of cylinders, centre to centre .. .. 6ft. 9½in.
- Distance between centres of valve spindles .. .. 2ft. 3in.
- Lap of valve .. .. .. 1 1/8in.
- Lead of valve (in full gear) ⅜in.
- Maximum travel of valve 4 1/16in.
- Stephenson link motion ..
- Diameter of piston-rod .. 3½in.
- Length of slide blocks .. 1ft 9in.
- Length of connecting-rod between centers .. .. 10ft. 9in.

Wheels (steel)—
- Diameter of driving and coupled wheels .. .. 6ft.
- Diameter of trailing wheels 3ft. 7in.
- Diameter of bogie wheels.. 3ft.
- Thickness of all tires on tread .. .. 3in.
- Width of all tires on tread 5½in.
- Distance from centre to centre of driving wheels 6ft. 6in.
- Centres of bogie wheels .. 6ft. 4in.
- Centres of driving wheel to centre of trailing wheel 8ft. 7in.
- Distance from centre of driving wheel to front of fire-box .. .. 2ft. 6in.

Axles (steel—
- Driving and coupled diameter of wheel seats .. .. .. 8⅝in.
- Driving and coupled diameter of bearings .. .. 8in.
- Driving and coupled length of bearings .. .. .. 9in.
- Driving and coupled diameter at centre .. .. 7⅞in.
- Centre to centre of all bearings .. .. 3ft. 7½in.
- Trailing axle diameter of wheel seat.. .. .. .. 8in.
- Trailing diameter of bearings inside and outside.. 7in and 6½in.
- Trailing length of bearings inside and outside .. .. 9in. and 11in.
- Trailing diameter at centre 6¾in.
- Trailing centre to centre of outside bearings .. .. 6ft. 7in.
- Bogie axles, diameter of wheel seat.. .. .. .. 6¾in.
- Bogie axles, diameter of bearings .. .. 6in.
- Bogie axles, length of bearings .. .. 9in.
- Bogie axles, diameter at centre .. .. 5⅞in.

Crank pins (steel)—
- Diameters of driving crank pin .. .. 6in. and 6¾in.
- Lengths of bearings .. .. 5½in. and 4in.
- Diameter of coupled crank pin .. .. 5¼in.
- Length of bearing .. .. 4in.

Frames (steel)—
- Distance between frames 4tt. 0¼in.
- Thickness of frames .. 1¼in.
- Distance between bogie frames .. .. 2ft. 8⅛in.
- Thickness of bogie frames 1in.

Boiler (steel)—
- Centre of boiler from rail 9ft. 4in.
- Length of barrel (parallel) 15ft. 10in.
- Diameter of barrel oustide 4ft. 9in.
- Thickness of plates .. .. 9/16in.
- Longitudinal butt joints, treble riveted
- Circumferential butt joints, double riveted
- Thickness of smoke-box tube plate .. .. ⅜in.

Fire-box (steel)—
- Length outside .. .. .. 8ft. 10in.
- Breadth outside at bottom 5ft. 2in.
- Depth below centre line at front end .. .. 4ft. 3in.
- Depth below centre line at back end .. .. 3ft. 2in.
- Thickness of front plate .. ⅝in.
- Thickness of back plate .. 9/16in.
- Thickness of sides and top ½in.

Internal fire-box (steel)—
- Length at bottom, inside .. 7ft. 11 5/16in.
- Breadth at bottom, inside 4ft. 4⅜in.
- From top of box to inside of shell .. .. 1ft. 6⅛in.
- Depth of box inside at front 5ft. 3in.
- Depth of box inside at back 4ft. 2in.
- Diameter of Low Moor iron stays .. .. ⅞in.
- Distance of stays apart .. 3¼in.

Tubes (steel zinced)—
- Number of tubes 193
- Length of tubes between tube plates.. .. .. .. 16ft. 2⅝in.
- Diameter outside of tubes 2¼in.
- Diameter outside of tubes at smokebox end .. .. 2 5/16in.
- Diameter outside of tubes at fire-box end.. .. .. 2⅛in.
- Thickness of tubes .. .. 11 w.g.
- Diameter of exhaust pipe nozzle.. .. .. 5in.
- Height of chimney from rail 14ft. 5½
- Heating surface in tubes .. 1843. 65 sq. ft.
- Heating surface in fire-box .. 132. 35 sq. ft.

Total .. .. 1976 sq. ft.

Area of fire-grate .. .. .. 35 sq. ft.
Working pressure .. .. .. 180 lb. per sq. in.

Tender wheel base—
- From front buffer beam to front bogie centre .. .. 6ft. 6in.
- From front to hind bogie centres .. .. 11ft.
- From hind bogie centres to back buffer beam .. .. 5ft. 1in.
- Centre to centre of bogie wheels .. .. 5ft.

Wheels (steel)—
- Diameter of wheels on tread 3ft. 1in.
- Thickness of tires .. .. 3in.
- Width of tires .. .. .. 5½in.

Axles (steel)—
- Diameter of bearings.. .. 5¼in.
- Length of bearings .. .. 9in.
- Diameter of wheel seats .. 6¾in.
- Length of wheel seats .. 6in.
- Distance between centres of bearings .. .. 6ft. 4in.

Frames (steel)—
- Distance between frames .. 6ft. 1½
- Thickness of frames .. .. ⅝in.
- Distance between bogie frames .. .. 5ft. 9¼in.
- Thickness of bogie frames ⅝in.

- Capacity of tank .. .. .. 4250 gollons
- Capacity of coal space .. .. 8 tons
- Tractive force.. .. .. .. 19,277 lb.
- Tractive force per ton of adhesive weight .. .. 507 lb.

Weights—	Tons.	cwt.
Weight of engine in working order:		
On bogie wheels	15	10
On coupled wheels.. ..	38	0
On trailing wheels	17	17
Total	71	7
Weight of engine empty ..	65	1
Weight of tender in working order (front bogie)	24	2
On hind bogie	24	11
Total	48	13
Weight of tender empty ..	21	13
Total weight of engine and tender in working order	120 tons	

The engine is fitted with the following:—Westinghouse quick-acting automatic brake; Westinghouse steam heating apparatus for carriages; Holden and Brooke's steam sanding apparatus fitted in front of leading coupled wheels; Gresham's No. 9 combination injectors; the boiler and cylinders are clothed with the Cape Asbestos Company's Pluto brand mattresses, and the piston-rods and valve spindles are fitted with the United Kingdom Metallic Packing Company's packings; Laycock's patent combination automatic couplers; the Dayton Manufacturing Company's acetylene gas head lamp, with "Mosher" gas generator enclosed in anti-freezing cabinet and fitted with purifier; and Smith's patented combined lubricator and cylinder vacuum destroying valves.

CHINESE GOVERNMENT RAILWAYS

PEKING-MUKDEN LINE

Tenders are invited for the following:—

INDENT No. 2111.

281,000 Japanese Sleepers 8′×9″×6″ of Nara, Yachitamo or Katsura.

Quality.—The quality of timber must be uniformly good, free from shakes, excessive knots, sapwood, twist, pickmarks or other defects. All must be Winter cut *i.e.* felled between 1st November, 1912, and 1st March, 1913. Two (2) full-sized samples of each timber to accompany Tender, which otherwise will not be entertained.

Delivery.—To be delivered as follows:—

(*a*) 170,000 on Hsinho Wharf.

(*b*) 111,000 on Yingkow Wharf.

(*a*) First consignment of not less than 25,000 to be delivered not later than 1st April, 1913. The balance to be delivered before the 1st August, 1913, in consignments of not less than 25,000 per month.

(*b*) First consignment of not less than 25,000 to be delivered not later than 1st April, 1913. The balance to be delivered before the 1st July, 1913, in consignments of not less than 25,000 per month.

A penalty of One Tael Cent (Tael 0.01) per Sleeper per day will be imposed for each day of delay.

INDENT No. 2112.

4,350 Japanese Crossing Timbers, as under:—

800	Crossing	Timbers.....	9′ 0″×9″×7″
700	,,	,,	.....10′ 0″×9″×7″
625	,,	,,	.....11′ 0″×9″×7″
650	,,	,,	.....12′ 0″×9″×7″
770	,,	,,	.....13′ 0″×9″×7″
440	,,	,,	.....14′ 0″×9″×7″
180	,,	,,	.....15′ 0″×9″×7″
155	,,	,,	.....17′ 0″×9″×7″
30	,,	,,	.....18′ 0″×9″×7″
Total...4,350.			

Quality.—The whole of the above to be either of best quality Yachitamo or Nara (White Oak) *i.e.* not a mixture of both. To be Winter cut *i.e.* felled between 1st November, 1912, and 1st March, 1913. To be uniformly good, free from shakes, excessive knots, sapwood, twist, pickmarks or other defects. Full-sized 9 feet sample to accompany Tender, which will not be entertained otherwise.

Delivery.—To be delivered on Railway Wharf, Hsinho, not later than 1st May, 1913.

A penalty of Two Tael Cents (Tael 0.02) per Crossing Timber per day will be imposed for each day of delay.

INDENT No. 2113.

7,100 Bridge Ties 10′ 0″ × 9″ × 8″ of Oregon Pine or Japanese White Oak (Nara). To be sawn on all four sizes strictly in accordance with above measurements.

Quality.—The timber must be uniformly good, free from shakes, excessive knots, sapwood, twist, pickmarks or other defects and must be Winter cut *i.e.* felled between 1st November, 1912, and 1st March, 1913. Full-sized samples to accompany Tender, which will not be entertained otherwise.

Delivery.—All to be delivered on Hsinho Wharf, not later than 1st May, 1913.

A penalty of Two and a half Dollar Cents ($0.02½) will be imposed per Tie for each day of delay.

Quotations.—All quotations to be in Local Currency Dollars.

Inspection.—The above Timbers will be subject to a rigid examination by a Railway Engineer at Hsinho or Yingkow, and will be rejected if not in accordance with the Railway requirements.

Tenders must be addressed to the Managing Director, Chinese Government Railways, Peking-Mukden Line, Tientsin, and marked **Tender for Sleepers, Crossings and Ties,** Indents Nos. 2111, 2112 and 2113, which will be opened at 11 o'clock a.m. on Friday, 6th December, 1912.

Specification forms of Tender may be obtained on application to the above address. No Tender will be entertained unless made upon the forms thus obtained.

The Managing Director does not bind himself to accept the lowest or any tender.

LI TSOI CHEE,
Tientsin, 7th October, 1912, *Managing Director.*

this number a precis of the lucid and illuminating contribution to the study of the currency problem in China prepared by Dr. Vissering, who combines the most profound expert knowledge with a tender regard for the non-technical reader. The average layman, we confidently assert, will gain more real knowledge of currency matters in general, and of China's money problems in particular, from the perusal of this precis than could be obtained from any other exposition of the questions involved that has recently seen the light.

It is not our purpose to traverse the ground covered by Dr. Vissering at this juncture. Our immediate object is to direct the attention of non-technical readers to the fact that Dr. Vissering's report is expressed so clearly that the assimilation of the really valuable information incorporated is a pleasure instead of a task.

China, unfortunately for herself, does not make the best use of the work of the experts she pays to advise her. The practice has been adopted of paying advisers handsomely and keeping their reports as pleasant records of their activity, too precious to be removed from departmental pigeonholes. Even now, when a new spirit is supposed to be inspiring China, we find her proposing to take steps likely to defeat the objects sought to be attained by Dr. Vissering. The following telegram, dated Peking, November 11, shows that the Government is unwisely attempting to take short cuts, when, as Dr Vissering proves conclusively, short cuts would almost certainly lead to disaster:—

"The Cabinet held a special meeting on the 10th inst., at which it was decided (1) that a special treaty be entered into with the Mexican Government to limit the importation of Mexican dollars, (2) further manufacturing of copper coins should be prohibited throughout the country and (3) the paper notes issued by the former military authorities should be withdrawn and only the Government will have the power to issue notes thereafter. The various foreign banks will be requested to withdraw the banknotes issued by them to a certain extent, as the bank authorities consider convenient."

A much wiser step has been taken in calling upon the provincial authorities for full reports in regard to the coins and tokens in circulation, and for information relative to banknotes. The information sought will be invaluable when currency reform is seriously entered upon. The questions asked, according to the *Peking Daily News*, are as follow:—

1.—What are the kinds of dollars that are in current use in your locality?

2.—The dollars of which provinces are accepted most readily on the market?

3.—Are the dollars of other provinces subject to discount on the market? If, so, how much upon each dollar?

4.—What is the weight of the dollar coined in your province? Its percentage of silver, of lead or copper?

5.—Since the establishment of the Central Mint in Tientsin, how many copper cents has your province coined? How is their circulation on the market?

6.—What is the exchange value of the copper cents for the silver dollar in your locality?

7.—Is there any discount on the copper cent in the market?

8.—Are the small silver pieces readily accepted on the market? What are their relative values?

9.—What are the kinds of the bank notes used in your locality? Which are the most popular? What are their face values?

10.—What is the amount of the bank notes that have been issued thus far? Are there reserves in the banks for the issue of these bank notes? If so, how much?

11.—Are the bank notes readily accepted on the market? Are they driving the silver and copper out of the market?

12.—Besides the bank notes, are there other kinds of notes, such as cheques and promissory notes, used on the market? If so, what are their systems of management?

Dr. SUN YAT SEN'S RAILWAY SCHEME

Fourteen years ago when spheres of influence were accepted as the expression of foreign policy towards China, and the world freely discussed the partition of the Empire amongst European Powers, and at a time when the mailed fist was banged on the table at Peking to secure leases, concessions, and loans, a railway scheme for the country was evolved. The needs of China were not consulted except inasmuch as the country would benefit by the construction of any line between two cities. All Powers laid down certain projects within the confines of their respective spheres of influence, having for their main objective the development and aggrandizement of the leased or ceded ports on the coast of China, or the enrichment of special foreign interests. And the lines then projected still stand as the only scheme for the construction of railways to develop the country. Foreign maps of the country published ten and twelve years ago, strikingly illustrate the set foreign policies behind most of the schemes.

It is interesting to know that twelve years ago, when foreign railway projectors had linked up the principal centers of China, with lines serving particular political ends, there was one man in China devoting his time to dreams of a purely national system which would counteract the other schemes and serve to advance the special interests of China. This Chinese patriot had other visions; he saw in his dreams the overthrow of the dreaded and tyrannical Manchu dynasty, and the creation, in the ruins of the oldest empire in the world, of a new Republic. Surely he was a visionary, a dreamer of dreams, and one to be shunned by practical men! But the dreamer walked in his sleep. He kept moving onwards. His path led him around the world, where he told his fellow countrymen of his visions. The Manchu Government laid a price upon his head, and emissaries were despatched to follow and awaken the sleep walker, or lead him to an eternal slumber. He passed his years in exile, and labored to make his dreams come true. A year ago the miracle of miracles occurred, and the hoary old Empire tottered to its fall, before the wave of republicanism which swept over the land. The dreamer awoke to find himself famous—the chosen President of this great Republic. Rather a practical ending to such an impossible and impracticable vision! The world has need of dreamers like Dr. Sun Yat Sen. And yet, despite the great object lesson of this crusade and its grand culmination, there are those who still refuse to recognize in Dr. Sun's schemes anything else but visions.

When on the realization of his dreams to secure peace for his country, the patriot stepped aside, and unselfishly gave way to Yuan Shih Kai, the practical world again jeered and refused to understand an action too lofty for selfish and mercenary minds to grasp. It is also interesting to know that as soon as the dreamer awoke to find his one great vision realized, he slid back again into the land of nod, and his mind centered on the old wall map on which he had, ten years before, traced out a system of railways for his country. Knowing that the consolidation of China, the development of her industries, the growth of her agriculture, the exploitation of her mineral wealth and her political future, could only be secured by the civilizing factor of a great network of railways, the dreamer again started to walk and travel throughout the land to educate the people to his view point.

He knew that foreign Powers and syndicates had cast covetous eyes on certain sections of his mother land, and that their policy towards his country found expression in their railway projects. He knew also that there were many treaties, conventions, understandings, protocols, leases, concessions, loan agreements, and other documents, some secret, some public, that had been drawn up and signed in the past restricting his country in the free development of its resources and construction of railways. He knew that certain nations had arrogated to themselves, by Right of Might, certain powers which infringed the sovereign rights of China, and prohibited the free construction of certain railways without their consent. He knew that many financial, and engineering problems and obstacles had to be solved and overcome, before his dream would come true. He also realized that the provincial rights had to be given careful and equitable consideration, and that the relation of the provinces to the Central Government must be clearly defined before a national system of railways could hope for success.

He knew that railway control was one of the most vital questions of Chinese domestic politics and that several Presidents of previous Railway Boards under the old regime had resigned rather than face the temper of the people. He knew that to the outside world, the question of provincial railway rights was the one which had been employed to arouse certain sections of the country against the greed of the Manchu authorities. He knew all this, but he also knew what the outside world did not know or understand: that all this hostility of the provinces against the interference of Peking in the control of railways was only one of the many outward manifestations of the revolutionary movement that he himself was responsible for. And he felt that now the Republic was established, this phase of the situation, so troublesome and dangerous to the Manchus, would disappear in time, before a campaign of education. In fact, Dr. Sun Yat Sen was fully cognizant of all the political and other obstacles in the path of railway construction, yet firm in his conviction that communications were the key to the future position of his country, he set to work to devise a preliminary scheme which would serve to arouse enthusiasm throughout the country, and provoke a healthy discussion of the whole subject. Had Dr. Sun been actuated by a desire to secure personal honour or temporary profit, he would have confined himself to projecting some little five hundred mile line, threading its way carefully through districts or between cities not covered by existing agreements. And the little circle of foreigners at Peking, would have clapped their hands with delight and applauded such an exhibition of statesmanship and practical politics.

But the dreamer dreamed, and he saw in his prophetic mind, the vast surface of his country, gridironed by railroads, with all the leading cities connected together, and the whole forming a system, such as those of which America or European countries could boast. The petty squabbles of foreign syndicates over rights to construct this or that section, or the claims of others to concessions forced from the country when the rulers were ignorant of their commercial or political value, did not enter the mind of Dr. Sun when he drew the lines of his system on his map. What are the rights of a few foreign syndicates as compared with the welfare of a great nation? All the rights already ceded away do not embrace more than 1,000 miles, and what are 1,000 miles of railways in a country so vast as China? And Dr. Sun while he recognized existing rights, limited to certain small sections of lines, embraced them all in one big scheme. He saw in his mind's eye that some day in the future, the country could easily find room for 60,000 miles of railways, so he drew them all in his map. And he tucked the map under his arm and carried it to Peking, and there in the presence of the President and his Cabinet, the Ex-President laid before them his ideas of what a railway system for China really ought to be. To those of the old regime, whose horizon had been limited to the construction of this or that line for the sake of the official profits connected with the enterprise, such a comprehensive scheme was naturally too big for them to grasp. But President Yuan gave way before the earnest arguments of the Ex-President and then and there gave his assent to the scheme, and issued a Mandate empowering Dr. Sun Yat Sen to enter into negotiations for the financing and construction of the lines. In many speeches at Peking and elsewhere Dr. Sun emphasized the necessity of an adequate system of railways, and to arouse the interest and enthusiasm of his audience, dwelt on the great extent of mileage needed to develop the country. He accomplished his object. He left Peking for the South, to take up his great work.

With a thorough understanding and mutual confidence between the President and Ex-President, the political peace of the republic is assured. Had Dr. Sun Yat Sen held out firmly at Nanking he might now be the President, but he willingly sacrificed his personal ambitions for what he considered the best interests of his country, and to hasten the return of peace. President Yuan can only have one feeling for Ex-President Sun, and every instinct of honor must bind him with the closest ties of friendship for the man who made possible his ascension to his present high position. And despite the many rumors finding credence in Shanghai and elsewhere, it may be affirmed that the most cordial and friendly relations exist between the two leaders of the nation. If President Yuan is strong in the North, Dr. Sun Yat Sen still controls the South, and practical politics, apart from friendly motives, must influence the President in retaining the support of Dr. Sun, and practical politics in addition to strong ties of friendship will guide the President in his future attitude towards the man to whom he has entrusted the construction of railways. It has been urged in some quarters that President Yuan and his adherents in Peking, animated by petty and unworthy political motives, only sanctioned Dr. Sun's plans in the hope that by so doing, he would hasten his political downfall, and by a premature exposition of his schemes the people of the country would turn against him. It has also been urged that the sum appropriated to defray the expenses of Dr. Sun's railway office, was only the price to purchase his political support in the future, and that the Peking authorities did not intend that Dr. Sun should ever seriously undertake negotiations for the financing or construction of railways. In other words, that the Peking authorities did not take Dr. Sun's appointment seriously and that as soon as he attempted to put his ideas in operation, obstacles would be placed in his way to frustrate their practical application.

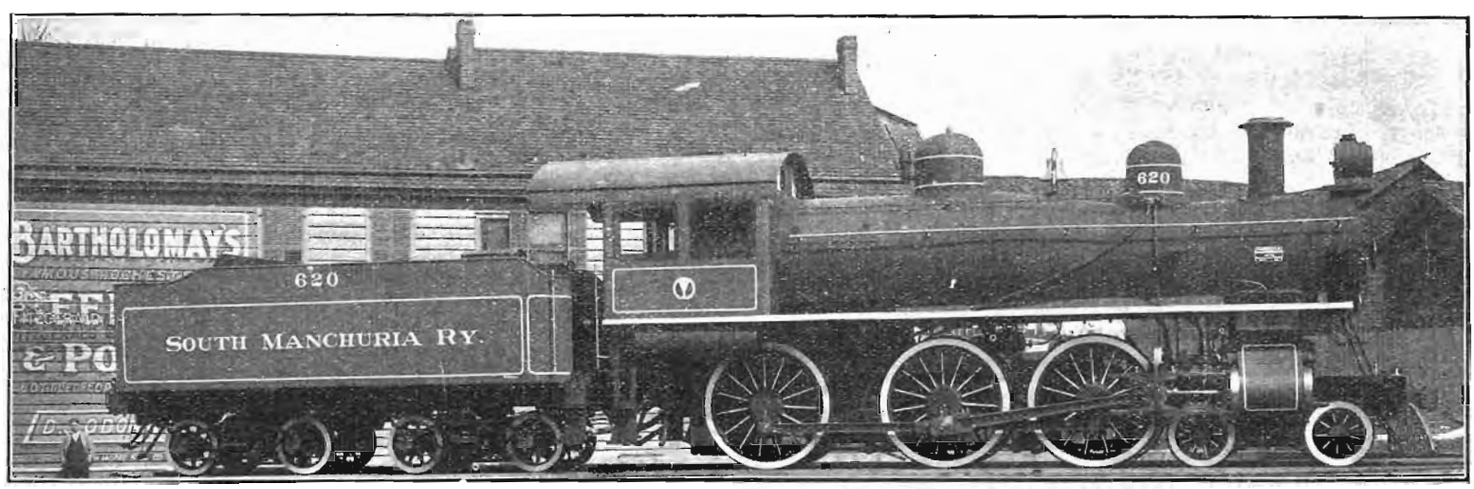
It is obvious that such stories can have little foundation, for reasons already stated, for President Yuan would not deliberately wound the feelings of Dr. Sun, or forfeit the support of the South, by any international slight to its acknowledged leader.

There may be many of the old regime, some of whom are still in power, who look backward to the old order of things and resent the President's appointment of Dr. Sun Yat Sen to a position superior to that of the Minister of Railways, in regard to the construction of new lines. In fact considerable criticism has already been aroused, some characterizing the appointment as superfluous, and conflicting with the duties of the Ministry. There are, however, good precedents for the creation of a special Commission to study national railway conditions and necessities; devise a general scheme; originate a railway policy and enter into necessary financial arrangements to make it a success. The powers of such a Commission, or independent national railway organization, need not conflict with the control over existing lines. The Ministry of Communications may still exercise full authority over all lines in operation; those under construction and those already provided for. Other countries have found it profitable to entrust the work of projecting new lines to a special permanent commission working independently of, but in harmony with, the Central Railway Board. In any country operating a national system of railways, where the supreme control is affected by politics, and where the responsible authority holds his position by virtue of political influence, the existence of a permanent Central Railway Commission insures the constant evolution of a national railway policy, unaffected by the changes in the Central Board. It has already been pointed out that China has no definite national railway scheme for the development of her territory, apart from the many semi-political lines and extensions advanced by foreign Powers for the furtherance of their own interests. And during the last fourteen years, and especially in the last four years, there has been such a procession of Presidents or Ministers, in temporary control of the Railway Board, that it has been impossible for any one of them to concentrate his thoughts or time upon any general scheme for the welfare of the nation. Under the old regime, the Presidents of the Railway Boards were fully occupied in dealing with the schemes advanced by foreign interests. Conditions have changed. No longer can China wait upon the whims of any high official temporarily filling the post of Railway Minister. Ministers come and Ministers go, and each one has his own ideas of railway construction. In the one year since the establishment of the Republic, three excellent officials have presided over the Ministry of

Communications. Although it is to be hoped that the present incumbent may retain the portfolio for a few years, there is already talk of shifting him to another Cabinet position, and appointing a new man to fill the vacancy. While such conditions exist at Peking, the best interests of the country demand the existence of a purely non-political permanent Central Railway organization, that will draw up a national scheme, originate a policy, and devise a way to finance it along the most equitable and just lines for the nation and the investor. With such a Board exercising its functions safe from political attacks, the Ministry of Communications may remain in the arena of practical politics, and its head may be shifted at the will of the President, without in the least retarding the all important work of developing the country.

So, aside from the strongest ties of gratitude and friendship, and the promptings of practical politics, President Yuan must be influenced by the pressing economic demands of the country, to stand by and support Ex-President Sun in making his work a success. Dr. Sun's plans may appear to some in Peking, as mere dreams, and they may attach little importance to his scheme, but they will have to admit that Dr. Sun is a very wide awake dreamer, and has a habit of doing things while others talk about them. Dr. Sun has taken on his shoulders the most important task of the Government. Nearly all of China's foreign troubles are bound up in railway concessions, and her greatest domestic political differences have arisen from the same cause. How many men under the old regime shirked the responsibility of their position, rather than face the determined attitude of the provinces on the railway question? And yet, with a full knowledge of the gravity of the situation, with powerful foreign and domestic influences to contend against, Dr. Sun Yat Sen accepts a duty and enters into a work, in which no other single official in China could hope to succeed. The Ex-President is the only man in China, apart from President Yuan, who commands sufficient influence at home and abroad to insure the sympathy of his fellow countrymen and the respect of foreign financiers. He has willingly sacrificed his personal ambitions, retired from active politics, leaving the field clear for President Yuan, and taken on his shoulders the one great task which others have evaded. There are those who profess to believe that Dr. Sun Yat Sen having received the sum of Tls. 30,000 per month from the President, to defray the expenses of his Central Railway Office, will be prepared to accept this sum as a personal pension. Let us see how far his actions justify this unworthy belief. Dr. Sun, since his appointment to organize a Central National Railway Company, has accepted the task in the same spirit as he did the work of organizing a revolution. He travelled through the northern provinces, and at every stopping place preached the gospel of the iron rail and its advantages to enthusiastic audiences. He wended his way up the Yangtsze, and again in three provinces he expounded to the people his ideas. His personality and directness of speech won sympathetic adherents at each place, and where a year ago the provincial gentry were hidebound in their opposition to the Central Government, and the introduction of foreign capital, they are now clamoring for foreign financial help. If the Ex-President did nothing more than travel around the provinces educating the people to the necessity of foreign capital for the construction of their railways, he will have fully earned the Tls. 30,000 per month appropriated, by the Government. But does Dr. Sun accept that sum as a personal income? We are able to say that he does not, and that it is merely advanced to him by the Government as a loan—eventually to be repaid. That is the understanding between Dr. Sun and the Government. Only a man of Dr. Sun's stamp and standing could expound such a delicate and vital issue before an audience of his own countrymen, with hope of respectful attention. Dr. Sun, after preparing the way and interesting the people, settled down to equally real work. He surrounded himself with a competent staff, and opened offices in Shanghai. Everything has been conducted as economically as possible, consistent with the importance of the work. Dr. Sun himself has only accepted a modest salary from the Government appropriation for the maintenance of the office. His staff have entered into their duties with a full realization of the hard and arduous work ahead, content with the hope that they may be instrumental in bringing about some solution of the weighty problems confronting the country.

There are many important matters to be settled before Dr. Sun can take the public into his confidence concerning his plans, and invite the co-operation of foreign capitalists. There are so many divergent interests to be considered and so many difficulties surrounding the construction of certain railways in China, that the most careful preliminary studies must be made to avoid the possibility of defeat. Dr. Sun's success will hinge largely on the outcome of the first proposition. If the terms of the first agreement are equitable and just to China, and free from any taint or suspicion of graft or corruption, such as have characterized other similar deals in the past, his success is assured. And those who know Dr. Sun Yat Sen as he really is feel confident that, with frank and unreserved assistance from the quarters from which he has every right to expect support, he will succeed in transforming what the unthinking term a "dream" into a tangible reality that will work for the enduring weal of the people of China.



TEN-WHEEL PASSENGER LOCOMOTIVE

Built for the South Manchuria Railway by the American Locomotive Company. Several locomotives of the same type were delivered in 1907, the results in the operation of which were so satisfactory that six duplicate engines were ordered from the builders last fall, and delivered during the month of July, this year.

FAR EASTERN RAILWAYS

RAILWAYS IN THE PHILIPPINES

ANNUAL REPORT OF THE SUPERVISING RAILWAY EXPERT.

The report of the supervising railway expert for the fiscal year ended June 30, 1912, indicates a total of construction on all railway lines for the year of 54.3 kilometers graded, 70.3 of track laying, and 105.1 of line opened. The total represents activity on the Manila Railroad Company's lines as on the Philippine Railway Company's lines, construction was. practically, closed in March, 1912.

The total kilometrage of lines in the Islands authorized constructed amounts to 1,785 kilometers; constructed and in operation, 1,034 kilometers; constructed and not in operation, 16 kilometers; to be constructed 734.

The Manila Railroad Company has an authorized kilometrage of 1,306, all of which is in Luzon. Of this 725 kilometers have been constructed and in operation; 16 kilometers have been constructed and not in operation at the end of the fiscal year, and the company has 564 kilometers to construct.

The construction on the Baguio line from Aringay included grading from the Aringay end for 10 kilometers and for seven kilometers from the Baguio end. On this line twelve kilometers of track will be required.

On the main line south a considerable portion of the location between Lucena and Callauag, Tayabas, on the east coast was completed in 1912. On June 30, construction was under way at Hondagua, the east coast port of Lopez. A grade of 1.2 per cent has been obtained between Lucena and the Gulf of Ragay and beyond that point to Nueva Caceres it may be impossible to secure so light a grade.

To complete its line as per contract the Manila Railroad Company will have to lay 91 kilometers of track yearly as the date of completion is 1918.

Bonds to the total of $2,996,000 for the southern lines of this company were approved on July 1, 1911, and again on October 18, 1911 additional certificates to the amount of $940,000 were authorized and on January 22, 1912, $1,000,000 were authorized making a total of $4,936,000 U. S. currency. These bonds cover 229 kilometers of line in full commercial operation and represent a cost per kilometer of about P43,110 or $34,688 U. S. C. a mile. Since 1910 net earnings on the southern lines of the Manila Railroad Company have been sufficient to pay all fixed charges and leave a considerable surplus to the company.

On the Northern lines there were 441 kilometers of track in operation against 409 in 1910. For the calendar year ended December 31, 1911, the operating revenue amounted to P2,833,047.81, an increase of P338,362 over the previous year while there was only an increase in track of 32 kilometers. The operating expenses amounted to P1,257,158.20, an increase of P184,186.73. The percentage of operating expenses to gross operating revenue was 45 against 43 for the previous year.

The equipment was increased during the year by eight third class passengers cars, three combination coaches, 76 freight cars, while there was a reduction ot 29 company service cars. The equipment included 64 locomotives, 156 first, second, third combination and parlor cars, 770 freight cars and 127 in company's service.

On the Southern Luzon lines of this company there were 111 kilometers in operation on December 31, 1910, and 128 in operation on the last day of 1911. The operating revenue amounted to P761,850 for the calendar year ended December 31, 1911, an increase over the previous year of P559,980.

The operating expenses amounted to P409,266.53, an increase of P218,124 and the percentage of operating expenses to gross revenue 46.3 as against 67 the previous year, a reduction of 20.7.

The equipment of the Southern Lines was increased by five locomotives, 13 passenger cars and 51 freight cars during the year. The equipment now comprises 26 locomotives, 59 passenger cars of the different classes, 241 freight cars and 124 in company's service.

The Philippine Railway company's lines in Cebu represent an outlay of $3,317,000 or a cost of $69,394 a kilometer or $55,842 a mile. The line in Panay cost to the end of the fiscal year $5,065,000, $87,102, a kilometer or $63,645 a mile. The average cost a kilometer for the roads on both islands was $79,113 a kilometer or $63,645 U. S. C. a mile.

At the end of the fiscal year 1912 the government had paid out in interest on the guaranteed bonds of this company, P2,241,828. Of this amount there has been returned from the net earnings of P47,691, leaving a balance due the government of P2,194,136. Another payment of P58,073 was made since the completion of this report.

This railway operates 98.83 kilometers in Cebu and 118.74 in Panay, a total kilometrage of 217.57.

The operating revenues amounted to $773,940.90 and the operating expenses P596,848.40 leaving a net operating income after paying taxes of P170,799.

The total fixed charges including interest, betterments, reserves amounted to P734,439.55 showing a corporate deficit of P554,640.34.

The equipment for the lines was increased by five passenger cars and 37 freight cars. It now consists of 15 locomotives, 50 passenger cars, 192 freight cars and seven cars in the company's service.

THE REPORTED BELGIAN RAILWAY LOAN

Much speculation has been caused by the announcement of the arrangement of a loan for £10,000,000 between the Chinese Government and a Franco-Belgian syndicate for the construction of a railway between Honan-fu, the present terminus of a short line running east to Kaifeng-fu, and Sian-fu, with an extension north-westwards to Lanchow-fu, capital of Kansu Province, and an extension eastwards from Kaifeng-fu to the present undeveloped port of Haichow-fu on the coast. Such a line would cross the Pukow-Tientsin line about Hsuchow-fu, following the old bed of the Yellow River from near Kaifeng.

A Chinese Company has already constructed about thirty miles of line to the westward of Honan-fu, and it is practically ready for traffic. Thence the line will strike to Kansu and traverse some of the richest agricultural land in China. At present all merchandise is borne on mule back, and so difficult are the unkept routes through the loess and over the mountain passes and so great the traffic that the caravans suffer continuous heavy losses in animals. The bleaching bones of mules mark the whole way to the western country.

The region is described as the Switzerland of China, and possesses remarkable scenic beauty, as well as abundant material wealth.

The engineering difficulties all appear on the western section of the line. To the east of Kaifeng there are practically none. It is level country, with a route already marked by the old Yellow River. On the west any line will no doubt take the old cart road towards Shensi, by way of Tungkuan, across the province by Sian-fu, and up the valley of the Wei river. Carts travel about 1,000 miles from Honan by this route.

This line has been on the tapis for a long time, and the Compagnie Générale de Chemins de Fer et de Tramways en China, the Belgian organisation now negotiating for it, already had it laid down in the contract they entered into with China for the construction of the railway from Kaifeng to Honan, that they should have the option to make a loan for a line to Singan-fu, and that would surely lead them to bend every effort to acquire the right to build to Lanchow-fu and onwards. In Article 23 of that agreement it is set forth that "Should the Compagnie Générale de Chemins de Fer et de Tramways en Chine finish satisfactorily the work for the railway from Kaifeng-fu to Honan-fu, complying strictly with all the provisions of the present contract, and should the Chinese Government decide to extend the railway from Honan-fu to Singan-fu the Director General of the Imperial Chinese Railway Company agrees to come to an understanding preferably with, and to grant an option for the loan necessary for the said undertaking to, the Compagnie Générale de Chemins de Fer et de Tramways en China in conformity with the provisions and conditions of the present contract."

Nothing definite has been disclosed as to the terms of the new agreement. It is stated, however, that £2,000,000 was to have been paid up and that the money was to have been used by China for administrative purposes and not for the construction of the railway. Such an action would necessarily invoke a protest from the Governments of the countries wherein the bonds would be offered, and France did not hesitate to issue a notification that the loan would not be permitted to be listed on the Bourse. This precaution on the part of France in itself seems to have delayed the conclusion of arrangements.

With regard to the building of the section to the west of Honan-fu, mentioned above, it is interesting to note that it is portion of a section being built to Jung-kwan—the contract for the supply of the materials, bridges, equipment, workshops, &c., delivery of which commenced nearly two years ago, being held by Griffiths, Beddoes and Bray, Ltd.

The road-bed laid for some 30 miles from Honan-fu is being constructed entirely under Chinese supervision, Mr. Jeme Tien Yu acting as consulting engineer on behalf of the company, no foreign control being allowed. The cost of construction is being met out of the proceeds of an extra charge on the Chang-Lu salt likin authorised by Imperial edict. Several millions of taels have been collected from this source during the past three or four years, and expended on the construction.

"It is impossible" writes a representative of the contracting firm, to a London paper, "That the Belgians can obtain security on this section of the railway without reference to us, as we hold a first mortgage on the rolling stock and also a lien on the salt likin set aside to meet the expenses of construction.

"There appear a number of financiers anxious to enter into loan arrangements in China, who are satisfied with securities which have already been hypothecated, and it behoves merchants who have entered, into agreements with the Chinese under the old Manchu regime to keep a wary eye on securities that have been pledged to them."

As bearing on the above the following advertisement which appeared in the north China papers in November, and will be found in our advertising columns, is of interest:—The Chinese Government hereby reminds the Public that the Lotung Railway Company (商辦洛潼鐵路公司) holding the concession for the building and working of a railway between Honanfu and Tungkwan is a private concern whose business transactions, viz the engagements of the company relating to the purchase on credit of material and supplies for this railway, not having been approved of by the Chinese Government the latter in no case hold themselves responsible for same.—The Ministry of Communications, Peking.

The *London and China Express*, in referring to the proposed loan, says:—It would appear that an old-standing agreement with the Belgian syndicate for the construction of a

railway from Honan to the west has been revived. The loan will not be issued until next year. The actual date of the signing of the agreement was Sept. 18, and in one of the clauses thereof Belgium, in consideration of the concession for the two proposed lines just mentioned, agrees to cancel the concession granted in 1903 for the Pien-Lo line. The proposed lines, which are of great commercial importance, will be longer than the Peking-Hankow system. The Assembly has sanctioned the loan, and expressed its confidence in Belgian ability to bring the work of building the lines to a speedy conclusion.

In connection with the proposal to make Haichow a port (which desire on the part of China is to have a port of her own which may in a measure counteract the growing influence of Tsingtau) it is interesting to note that German authorities observe that unless a colossal amount of expenditure is defrayed for a period of at least twenty years to come, Haichow will scarcely make as much advance as Tsingtao, and thus the German interest will in no way be effected by the construction of the line. Nor, they declare, will the Tsingtao line, if extended in future, run counter to the interests of the Chinese railway, since Germany has at present no intention of constructing any railways in Shantung Province.

KIRIN-CHANGCHUN RAILWAY

The Kirin-Chungchun Railway was opened for passenger and goods traffic on October 21st last. As its name indicates this line connects the city of Kirin, the capital of Kirin province, Manchuria, with Changchun, the point of junction of the Japanese and Russian systems in Manchuria.

The railway is 78 miles long. By the treaties between China and Japan signed in 1907 and 1908 the Japanese Government was to furnish 2,150,000 *yen* through the South Manchuria Railway Co., as a portion of the estimated expenditure. Japan was also to nominate the chief engineer and head treasurer, while the entire management was to rest with the responsible general manager appointed by the Chinese Government. The exact figures are not yet available, but it is believed that the line cost about 4,000,000 *yen*. The Chinese Government has consequently contributed about 2,000,000 *yen*, or roughly one-half towards the cost of construction.

Kirin is the greatest lumber market in Manchuria. There are no other towns of importance on the route, but it is confidently expected that the trade developed with Kirin will justify the construction of the line. Kirin is situated in the middle of a great forest region—the northern spurs of the Chanpaishan—and is served by the Sungari River. A steamer service is maintained by the Chinese Eastern Railway; connecting with the railway at Taolaichao, which is about midway between Harbin and Changchun. The new line will prove one of the most important feeders of the South Manchuria Railway. The Russian line may benefit to some extent as the Russian station of Kuanchengtsu is very close to the Changchun station of the Kirin-Changchun Railway, but there is the disadvantage that the new line is of the standard gauge (as is the South Manchuria Railway) while on the Russian line the 5 feet gauge obtains.

The interlineal connecting service between the South Manchuria and Kirin-Changchun Railways, in the shape of a 2½ mile section between the S.M.R. Changchun Station and the K.-C.R. Toutaokou Station, was recently completed. As the case was with the connecting service between the Chinese Eastern and the S.M. Railways, the S.M. Railway undertook to construct that part of the connecting line which runs in its own Railway Area, the remainder extending from the boundary line of the Railway Area to Toutaokou Station having been built by the Kirin-Changchun Railway.

In the old days the journey from Changchun to Kirin took from three to four days, but now the journey can be done in six hours. The station at Kirin is some two miles distant from the east gate of the city, but a very good road has been made by the Board of Works under the supervision of a British engineer. This road passes through the International Settlement, which lies between the railway station and the east city wall.

It may be mentioned that the expenses in connection with the construction of the line were found to be greatly in excess of the original estimate. Mr. Fu was the first Chinese Director General appointed and was succeeded by Li Fen-nien and later by the present Director General Sun To-yui

The *Manchuria Daily News* says:—Opinions vary as to the actual value of this new railway as a carrier of goods.

The more optimistic observers seem to expect a great deal from the complete opening of the line.

One of them remarks as follows:

"At present two or three carloads of lumber are being sent out from Chiuchan Station 8½ miles west of Kirin. The export will become much brisker when the Sungari siding is finished, and is expected to increase to 10,000 tons, worth Y. 400,000, a year.

"Next to lumber comes tobacco leaves. They used to be carted all the way to Changchun, whence the Chinese dealers forwarded them to Mukden, and thence to China proper by the Peking-Mukden Line. The necessary decrease in the cost of transportation as a result of the completion of the new railway, will quicken the export of tobacco leaves and a conservative estimate puts it at 1,500 tons valued at Y.100,000 per season. A carload of tobacco leaves was despatched from Kirin by train on the 25th Oct. This is taken for the beginning of the coming brisk season which was opened in earnest about the 10th Nov., and will last till next March.

"Then come medicinal herbs which are mostly destined to Yingkou and are expected to amount to 550,000 *kin*. Hemp is exported to Mukden and Yingkou to the extent of 23,000 *kin*. Fungi are another important article of export, and find their way chiefly to Kaiping.

"The country lying to the east of Maanshan is a splendid cereal zone productive of beans, kaoliang, millet, &c. Kalunchieh is expected to despatch 10,000 *koku* of Beans, Inmaho 20,000 *koku*, Hsiachiutai 10,000 *koku*, and Yingchengtzu 30,000 *koku*.

"Speaking of imports to Kirin, Cotton yarn and cloths constitute the most important items. About 80% of imports go from Yingkou.

The S.M.R. Co. Mining Department is opening an agency at Kirin to exploit a new market there for Fushun Coal."

ANTUNG-MUKDEN LINE

The line stretching between Antung and Mukden was a light railway, 2' 6" gauge, built originally by the Japanese Extraordinary Railway Corps during the Russo-Japanese War for a distance of 188 miles and 7 chains. Later, by virtue of the Sino-Japanese Agreement, Japan was authorized to alter it to the standard gauge of 4' 8½". The work was started in August, 1909, and the whole line was opened to traffic on November 1st, 1911.

The distance between the two cities, when reconstructed, was reduced by about 18 miles and 5 chains. In former days, goods were sent from Antung to Chiknan Shan twenty-one tons having been the maximum limit of the carrying capacity. At the latter place they were transshipped to 5 or 6 small freight cars and forwarded to Penhsihu, where they were transferred to larger goods cars and then sent to Mukden. In case of shipping goods from Mukden to Antung, the order was reversed. The trouble incurred was not the inconvenience to shippers, for several days were taken in transportation, to say nothing of the expenses that had to be incurred. Since through traffic was opened between the two points by means of the broad gauge the carrying capacity of the lines has been considerably increased, and the time taken for transportation has been reduced, whilst the expenses has been cut down to almost one half of the former rate. As it is, goods to be transported by this line are gradually increasing in quantity. Those articles imported to Mukden from Japan come by way of Dalny instead of utilizing the new railway, for reasons of freight and other matters.

Relations Between Important Korean Towns and Mukden

The principal articles imported to Mukden from Chosen are rice, skins, leather, bristle, hemp, cigarettes and salt fish. The importation of the articles has come to show a marked increase since the opening of the through traffic. For instance, Yalu lumber was being shipped formerly from Antung to Dalny and Yingkow by oversea routes and thence to Mukden, but now it is directly sent by the railway.

As to exports, a very few articles such as millet, kaoliang, cigarettes and cotton textiles were sent out from Mukden, but now Fushun and Penhsihu coals are being shipped to Korea by the Antung-Mukden Line. But Korea being an agricultural country like Manchuria, trade between the two regions is inclined to be limited to certain special goods. Be that as it may, as the result of the railway having increased its carrying capacity and reduced the cost of transportation the consumption of Penhsihu coal has been extended all along the line and it has give great facilities to the iron manufacturing business at Miaokou. On the other hand, a large quantity of fuel, charcoal *mufen* (material for joss-sticks) are now sent to Mukden from Chiaotou, Nanfen, Hsiamatang, Lienshankwan and Tsaohokou so that prices on these goods have been greatly reduced at Mukden.

Increase of Passengers

Travellers from Japan, who journeyed to Manchuria, proceeded by way of Dalny in former days, but now they cross the channel from Moji to Fusan, and then by taking the Chosen Railway go straight to Mukden. In the same way, passengers from Mukden take the same route. Since it is said that the number of passengers taking advantage of this line does not amount to one tenth of those journeying by the Dalny Line, however, traffic between the latter port and Japan seems to feel little difference on account of the opening of this line.

ARTICLES OF THE SZECHUAN HANKOW RAILWAY

After some negotiation between the representatives of the Szechuan provincials and the Ministry of Communications, the policy of government ownership of the Szechuan-Hankow Railway has been agreed upon, says the *Peking Daily News*. The terms, which have been regarded satisfactory and accepted by both parties concerned, are:—

(1) The Szechuan-Hankow railway shall be owned and managed by the Central Government.

(2) Whatever sum is left in the Szechuan-Hankow Railway Corporation shall be returned to the shareholders and be devoted to the development of industry in Szechuan.

(3) The Central Government shall be responsible for the payment of the labour cheques issued and the arrears to be paid to different concerns through which materials for construction were bought by the Corporation.

(4) The Ministry of Communications shall be responsible for the annual expenditure of the railway construction, for which expenditure the Ministry may issue shares bearing interest of six per cent. per annum.

THE TIENTSIN-PUKOW RAILWAY

The following is the report of the Japanese Commercial Commissioner on the effect of the Tientsin-Pukow Railway on the trade of North China:—

The Tsinpu Railway which is the connecting main line between Tientsin, N. China, and Pukow opposite Nanking is 628 miles in length, and is divided into two portions by the Grand Canal.

The Southern Section which is 233 miles in length extends from Pukow to Li Kuo which is situated on the Southern bank of the Grand Canal and was built by British engineers with capital found by British capitalists. The Northern Section which is 389 miles in length extends from Hanchang to Tientsin and was constructed with German capital and by German engineers, and the celebrated bridge across the Hwang Ho which was completed recently is such that trains will be running very shortly over it and when the express service is once inaugurated it is estimated that the journey from Pukow to Tientsin will occupy but 33 hours.

The most important stations on the Southern Section are Chuchou, Linhuikuan, Pengfou, Suchou and Hsuchou,

The goods which find their way into the Huai Ho Valley, and their way into the markets from the Huai Ho Valley, concentrate on the stations of Penfou and Linhuikuan and as the land to the north of this valley is not only level but very arable it is safe to say that there will be an expansion of agricultural products in the future.

The region in the vicinity of Hsuchou is mountainous and is very highly mineralised. The Grand Canal comes into Weishan Lake at Likuo and the Canal is crossed by the railway line between Likou and Hanchuang, but at the present time there is no market there and no connection between the waterborne and railway carried traffic.

Northern Section

The Northern Section of the railway on the other hand passes in the vicinity of many important towns and a branch line has been constructed from Lincheng to Tsaochuang, its principal duty being the carriage of coal.

The following large towns lie along the line of the Northern Section, Kunchou, Chufu, Tsinan and Lokou.

From the Southern portion of the Province of Shantung to the city of Tsinan-fu the country is very mountainous: from the North of the Hwang Ho to the city of Tientsin the country is generally flat but this part of the country is distinctly lacking in facilities for water transport and is unirrigated.

Economically speaking, the Railway can be subdivided into three spheres of influence, the first being the Nanking sphere, the second the Tsingtau sphere and the last the Tientsin one which starts at Techou, and it is noticeable for certain reasons that this last named sphere is not used to nearly the same advantage as the two first named.

Goods which are for transport by the railway are classified under three headings, i.e. first, second and third class goods.

The following are considered as first class goods:—

Metals and metal ware, provisions, (except second class goods, tobacco, oils, tools, porcelain, stationery, silks, imported cotton piece goods, woolen fabrics, clothing, toilet accessories, dyes, hides, leather, skins, plants, seeds, raw cotton, straw braids, drugs, candles, etc.

Second class goods are as follows:—

Wrought iron, nails, lumber, pottery, tiles, vegetables, bricks, fish, native cotton piece goods, cotton yarn, cereals, etc.

Third class goods are as follows:—

Granite, coal, lime, manure, animal bones, empty cases, gunnies, etc.

Freight rates are the same throughout the whole length of the Southern Section of the line and are for first class goods 5 cent per 1 ton per 1 mile, for second class goods, 3 cent per 1 ton per 1 mile, for third class goods, 1½ cents per 1 ton per 1 mile, and for dangerous or hazardous cargo, seven and one half cent per one ton per 1 mile, but if the picul rates are used they come to about one-tenth of a ton.

The Northern Portion of the line is divided into three sections which are from Tientsin to Sangyuang

from Sangyuang to Lokou
from Lokou to Hancheng

and the various freight rates on these sections are as follows:

	1st Sect.	2nd Sect.	3rd Sect.
1st Cl.	3 cents	3½ cents	5 cents.
2nd Cl.	1.6 cents	2.25 cents	3 cents.
3rd Cl.	1.2 cents	1.25 cents	1.5 cents.

For dangerous or hazardous goods 7.5 cents.

Owing to the great competition with water traffic that the first section has to meet there has been a substantial decrease in freight rates.

Freight Rebates

It is not known what rebates in freight are given on the Northern Section but large shippers are given rebates in the Southern Section.

For first and third class goods if shipped in quantities requiring the use of a 20 or 30 ton car exclusively 15 per cent. rebate is granted, and 33 per cent. discount is given on foodstuffs, cereals and beans. For salt there is a discount of 25 per cent. and for all other second class goods 10 per cent.

The Southern section has an arrangement with the forwarding agencies whereby shippers of $28,000 of freight will receive at the end of a year a rebate of 7 per cent., shippers of $48,000 a rebate of 10 per cent., and shippers of $90,000 a rebate of 13 per cent., for which they are expected to provide and own godown accommodation of the value of $20,000 at least, but if they have accommodation of a less value than this their rebates will be reduced to 5 per cent., 7 per cent. and 10 per cent. for similar amounts of business.

Likin stations as administered under the old system are still in existence along the line, but at Pukow, the southern terminus, there is no likin office and goods which are actually transported by the railway company at the present time from Pukow to Tientsin are in the very favourable position of not having to pay any inland taxes whereas the goods that follow the same route overland have to pay at the various barriers the likin tax.

The goods which are exported from Eastern Honan, Northern Anhuei and Northern Kiangsu which go to the southwards by the Huai Ho Canal still have to pay the heavy likin so that they are now sent to Pukow by rail from Penfou and Sinhui-Kuan.

With regard to goods exported or imported in the Shantung province along the railway line the likin barriers exist only in Luankou and the districts along the Yui Ho Canal and goods entering the province through Tsingtau are not required to pay the half duty that is customary in other treaty ports and as the extensions of the Tsinpu Railway are made so will the trade between Tsingtau and the interior of Shantung prosper.

In the district between Tientsin and Taokouchen in Honan which is served by the Yui Ho Canal there are a large number of Likin stations in the following places:—

Tientsin, Yangliuching, Tuliu, Techou, Linching, Lungwangmiao, Chuwang and Taokouchen.

The goods from these districts are subject to heavy taxation before they are sent to the railway and the only places where goods can be brought to the railway free of taxation are Tsaiyuan and Techou.

At the time of writing, the Railway authorities having investigated this matter, and negotiations are proceeding with the Central Government with a view to having these taxes considerably reduced if not abolished, so as to give the Railway a fair chance.

Effect of Railway on Chinkiang

The Chinkiang trade sphere may be said to include the whole district North of Yangtse River. Formerly the trade of the valley of the Grand Canal to the southward of Tsining, in Shantung, and the trade of Northern Anhuei and Eastern Honan where the main stream and tributaries of the Huai Ho passed through and served, concentrated on Chinkiang.

Since the building of the Tsinpu line and its advantages to trade, the produce of the district about Soochou in North Kiangsu, and the country round Liuhuikuan will inevitably use the line, and the junks that have been in the habit of using the upper reaches of the Huai Ho in the past will all concentrate on Linhuikuan and Pengfou.

The goods that are under transit pass, and thus exempt from inland taxation, about which time is not the great and important consideration, will, as before be carried by water and will be transported to Chinkiang, but the goods which are subject to taxation from Northern Anhuei and other places before mentioned, will be concentrated at Nanking and Pukow for railway transport.

The natural result of increased prosperity in the carrying of railway goods will probably decrease the junk traffic very much and will decrease the number of junks calling at Liuhuikuan although at the present time most of the goods that are carried under transit passes and are thus exempt from inland tax are still carried by junk, and the decrease in junks will mean the increase in freight rates by the junk owners which will cause even more cargo to be driven into the ever open arms of the enterprising railway officials.

Owing to the fact that most of the transactions in both Chinkiang and Shanghai in export cargo are for hard cash, rapidity of transport is of more importance than rates of freight and

this also is causing an increase in the carrying trade of the railway.

The principal classes of goods that will be affected in consequence of the reasons we have explained are, cotton piece goods, silks and miscellaneous goods. As has been explained above, it will be easily seen that the imposition of likin and the tightness of the money market are two causes which specially affect the trade to the north of Chinkiang, but this tightness in the market will gradually disappear as order is restored in the interior.

The future prosperity of Chinkiang will to a large extent depend upon the gradual abolition of the Likin barriers altogether but no matter what the future of Chinkiang may be, the future of Pukow and of Nanking, Hsiakuan is bound to be good through the opening of the Railway.

Lately the Shanghai Nanking Railway authorities have suggested to the produce people to ship their produce by the Tsinpu Railway to Pukow and thence by the Shanghai-Nanking Line to Woosung, because beans and sesamum seed sent by this method of transport will come to Shanghai in two weeks earlier than it sent via Hankow or by junks as has been done in the past.

Of course if the produce shippers adopt this suggestion it will have a very bad effect on the trade of Chinkiang.

The trade of Chinkiang of late is only about 30 per cent. of what it was a while ago, but this is due chiefly to the danger of shipping goods owing to the internal disorders which have beset China in the past year or so, and to the tightness of the money market, and it may be said that of the total diminution in Chinkiang's trade about 30 per cent. of it was due to the opening of the railway, this being accounted for by the fact that the railway has chiefly been used for native goods, imports such as sugar, matches, cotton yarn, and cotton piece goods being sent through Chinkiang as before.

The reason for this is that the junk people on their trips into the interior sell to the people through whose country they pass, acting as sale men for the importers in fact, and in addition to this the freight by railway on these classes of goods is very high.

Effect on Tsingtao

Owing to the facilities in the matter of duty, etc., it is very convenient for shippers of import and export cargo from the districts with Tsinan-fu as a centre to have their goods passed through Tsingtao, for there is but one likin station along the line of rail and that is situated at Kiaochao, whereas there are frequent likin stations in the valleys of the Canal, Huang Ho, Hsiaoching Ho and Yui Ho. Moreover necessity for transit passes in this rail borne cargo is done away with.

This very satisfactory state of affairs has materially assisted the development of the interior of the Province of Shantung and the progress that has been made especially in agricultural products since the opening of the line has been nothing short of marvellous.

Owing to the goods having to pay half duty and the existence of likin stations in the district of Tientsin, a great deal of the trade that used to be done in import and export cargo destined for the Tsinan sphere through Tientsin is now being diverted to Tsingtao.

The native products of Tsiningchou and Yenchou-fu were formerly collected and sent to the South through Tsinning the terminus of the South Canal but the fact that there is no likin as well as the convenience of the railway traffic from the interior of Shantung, will firmly establish the influence of Tsingtao in this section of Shantung. The same phenomenon will be noticed to the Northward of the Huang Ho. Also, in western Shantung, the part which was formerly served by Tientsin, the Chinese produce seller, who is very careful in his calculations, will reckon out the costs of transporting his goods by the old and the new ways and will of course adopt the cheapest method, and as there are ever increasing quantities or Lintsing cotton finding their way out by Tsingtao via Tsinan-fu, this is good evidence for assuming that the sending by Tsingtao by the railway will rapidly increase.

By the linking up of Tsingtao to the Tsinpu Railway system there has been already an expansion in trade in the following important centres, at part of Yenchou-fu, Taian-fu, Tungchang-fu, a part of Lintsingchou and the northern part of Hang Ho, and further expansion is surely expected.

Although the freight rates between Lukow and Hanchuang on the Southern frontier of Shantung are as high as those obtaining on the Southern section of the Tsinpu line, there is reason for this, there being no competition between the railway and river so that the produce from this part of the country will all find its way to the railway for carriage to Tsingtao via Tsinan-fu.

Effect on Tientsin

Seeing that the Yu Ho runs close along the line traversed by the Tsinpu railway from Tientsin to Sangyuang which is near to Techow on the borders on the Chihli Province, the rates of freight on this particular section of the line are the cheapest in the whole system, and between Techow and Huang Ho there are no very big trade centres, so traffic in that section is not so very large.

In the valley of the Yu Ho, Lintsing is the largest trade centre and it is connected with Tao Yu Chen in Honan, and the districts in the Yu Ho Valley which are most convenient for shippers of goods by rail lie between Tehchow and Tientsin, and the districts between Tientsin, Tehchow, and Lintsing, do not enjoy the advantages of the Railway traffic as in the districts between Chuchon, Linhuikuan and Nanking in the Southern section of the line.

The time taken by junk to transport goods between Lintsing and Tientsin is about one week in average circumstances, and in going from Tientsin to Lintsing there is about a 20 per cent. increase in the rate of freight in addition to which the journey takes from fifteen to twenty days according to the state of the river.

The Railway freight rate for second class goods between Tientsin and Sangyuang is 21 cents per picul, and the railway freight rate on second class goods between Tientsin and Tehchow is rather more then 24 cents per picul, so that comparison shows that goods which have to be brought from Lintsing to Tehchow by water and then transferred to the railway for shipment to Tientsin will cost a substantial deal more than waterborne cargo, hence shippers do not avail themselves of the Railway in these parts unless it is a case that the particular cargo is such that quick transport of the same is a necessity.

From the viewpoint of general commodities, Tientsin will not really suffer any appreciable commercial loss through the opening of the Tsinpu Line, nor will Tientsin receive any particular advantage, as also Tientsin need not fear that improved railway communication will cause Tsingtao to rob her of a fair share of interior trade, as the freight rates of the railway are so high in these parts compared with that of the water routes to Tientsin will be continued to be used extensively except for such special goods as it is necessary to be shipped rapidly to Tsingtao.

Tsingtao, it is admitted, stands in a much more favourable position than Tientsin, owing to the absence of Likin stations and the resulting payments of half duty but if the Government for the sake of finance, finds it necessary to institute Likin stations in Shantung then the Tsinpu railway will be more utilized for carrying goods to Tientsin. The Railway cannot hope to beat the water traffic, but, if the above described taxes are imposed, the railway will receive much more carrying to do from districts in which there is no water communication.

Future of Tsinpu Railway

The above remarks convey in a rough sort of way the conditions of the line at the present time.

Taking first the Southern section, the future of that is assured. Pengfou and Linhucikuan are rapidly assuming much importance as trade centres owing to the water and rail communications meeting there, and around Hsuchow, as soon as normal conditions are restored, which do not exist at the present time for a variety of reasons, there will be tremendous trade increases in these districts.

As regards the Northern section, owing to the fact that Tsinan-fu is the direct junction of the Tsinpu and Tsingtao lines it will become more and more the actual trade centre of Shantung.

It is not so very long ago that Tsinan-fu was opened to international trade consequently there are as yet in Tsinan but few foreign firms that deal in native produce established, but of course that must now alter owing to the exceptional railway facilities and we prophecy that in the next few years there will be a very remarkable expansion of trade so that the outlook from that as regards the earnings in the future of the railway are very promising.

With reference to the Hsiao Ching River which runs between the city of Tsinan and the Gulf of Pechili at a place called, Yuan Chao Kao, the river is too shallow to be of much use at the present time; and it is 400 li in length. If however it were dredged, much use could be made of it and it would serve a number of places and would directly benefit the line. As it is this river is now only used for the conveyance of salt.

Revision or abolition of the present inland taxes would give much relief to water borne traffic in the districts north of the Huei Ho but there would be no corresponding benefits to the railway, still, whatever may be done in future, goods destined to be shipped across the seas to foreign countries will as time goes on more and more use the railway which has entered upon a career of, we trust, great prosperity.—*The China Tribune.*

SOUTH MANCHURIA RAILWAY

Locomotives and Rolling Stock

The latest returns for the locomotives and rolling stock of the S. M. Railway are as follow:—

Locomotives:

Inspection locomotives	2
Double ender tank engines	69
American type	4
Prairie Switcher type	35
Ten wheeler type tender	30
Pacific type tender	7
Consolidation type tender	108
	255

Cars and Wagons:

State car	1
1st cl. passenger cars	5
1st and 2nd cl. composite cars	24
1st cl. and Baggage composite cars	7
1st cl. and Dining " "	3
Dining cars	3
Sleeping cars	9
2nd cl. passenger cars	36
3rd " "	50
3rd cl. and Baggage composite cars	30
Mail and Baggage composite cars	22
Inspection car	1
Box cars	1,211
Gondola cars	1,099
Coal cars	165
Flat cars	123
Water tank cars	5
Oil tank cars	6
Caboose cars	106
	2,715

Principal Bridges

On Main Line:

	Length.
Over Hsingyocheng River	1,352 ft.
" Taitzu "	1,467 "
" Hun "	2,606 "
" Tiehling "	1,014 "
" Ching "	2,262 "
" Tungliao "	1,014 "

On Mukden-Antung line:

Over Taitzu River	1,785 ft.

Principal Tunnels

	Length.
Fuchinling Tunnel	4,884 ft
Chikuanshan Tunnel	3,254 "

Traffic Returns

The S.M.R. Traffic Returns for the month of October give Y. 1,259,743, being a decrease by Y. 14,360, as compared with the corresponding period of last year. The daily average amounted to Y. 40,637.

The aggregate receipts from last April totalled Y. 8,219,051 which means an increase of Y. 621,724 on the preceding year.

Capital Expenditure

The South Manchurian Railway Company management invested the total sum of Y.117,950,000 as capital expenditure up to March 1912. Originally, says the *Manchuria Daily News*, the sum of Y 100,000,000 was set aside for capital expenditure, but this was thought inadequate for the purpose, and the total was increased three years ago by Y.40,000,000, so as to meet the requirements of the first stage of the company's programme of sundry enterprises. The plans for the first stage were closed at the end of last March, and as the capital outlay for the second stage, a sum of Y.47,380,000 has been appropriated for disbursements during three years dating from the present fiscal year. This sum will be employed mostly in the construction and improvements of the railways, harbours, etc. The share allotted for the present year is Y. 15,920,000. This will be principally supplied by the Y.10,000,000 which was called up in two instalments of Y.6,000,000 and Y.4,000,000 on June 1st and Oct. 1st respectively. As regards the Y.31,160,000 for disbursement during the two succeeding fiscal years, the remainder of the subscribed share capital of the company, amounting to Y.8,000,000, will be called up first of all, and the balance of Y.23,460,000 is most likely to be raised by offering share stocks of the company for subscription, which is invested with the authority to increase its share capital up to Y 100,000,000 as occasion may require. It is said that no debentures for the purpose of raising the above-mentioned balance will be floated abroad.

KOWLOON-CANTON RAILWAY

At the meeting of the Hongkong Legislative Council held on October 26, the Colonial Secretary gave some interesting information relative to the Kowloon-Canton Railway. He stated that the total sum now estimated as being required to complete the construction and equipment of the Main and Branch Lines amounts to $2,128,052, or, excluding the sum of $1,473,880 already voted by Council for the Station site, to $654,172. The principal items of which this last figure is composed fall under five main heads of expenditure, namely, (*i*) Station and Station Yard, (*ii*) Locomotives, (*iii*) Addition to Engine and Engine Shops (*iv*) Carriage and Wagon Rolling Stock, and (*v*) Manager's House.

Station and Station Yard

The provision required on this account is distributed under the following heads of charge:—

Formation

(*a.*)—Roads	$ 6,655

Track

(*a.*)—Ballast	10,954
(*b.*)—Permanent Way	31,075

Station and Buildings

(*a*)—Buildings and Fixtures	254,128
(*b.*)—Station Machinery	18,081
(*c.*)—Furniture	6,000

General Charges

(*a.*)—(1.) Salaries and Allowances	12,477
(2.) Office Expenses	1,002
	$341,272

With the addition of one more main line engine there would be five engines of this description and three branch line engines, the order for the third branch line engine being now in the hands of the Crown Agents.

In regard to the terminal station at Kowloon the Colonial Secretary said that the plans for that building were not thrown open to public competition among local architects and others. He found that he could make more economical arrangements which he thought would be quite satisfactory. Mr. Hubback, of the Federated Malay States service, was to undertake the work, no matter what the cost might prove to be, whether $200,000 or $300,000, for an inclusive fee of $5,000, which, he thought was exclusive of travelling expenses to this Colony and hotel expenses. Mr. Hubback was a gentleman who had designed many terminal stations for large railways.

Great dissatisfaction is felt by the architects and civil engineers in Hongkong at the arrangement. It is pointed out that the recognised professional scale of remuneration for Architects services in the Federated Malay States is 7% on the cost of a building and in Hongkong for a building of this description would be 5% plus 1½% for quantities, so that assuming the Building to cost $200,000 the Government proposed to get for $5,000 what according to the recognized professional scale they should pay $13,000. The Royal Institute of British Architects of which body Mr. A. D. Bubback is a Fellow might have something to say in the matter, and it is suggested that it is more than probable that Mr. Hubback himself, will, when he learns of the invidious position in which he has been placed, decline to have anything further to do with what is described by one critic as a "Jew's Bargain."

SHANGHAI TRAMWAY RETURNS

The returns of the Shanghai Tramways (Foreign Settlement) for the week ended November 6 are as under:—

	1912.	1911.
Effective receipts (after deducting loss by exchange)	16,717.79	14,930.32
Passengers carried	859,313	700,896
Car miles run	52,702	50,799

The loss by exchange of subsidiary coinage for the week was equal to 23.57 per cent. of the gross cash collected on the cars as compared with 22.37 per cent. for the corresponding week last year.

For the week ended November 13:—

	1912.	1911
Effective receipts (after deducting loss by exchange)	$15,457.98	$14,186.97
Passengers carried	784,669	680,229
Car miles run	51,127	50,008

The loss by exchange of subsidiary coinage for the week was equal to 23.39 per cent. of the gross cash collected on the cars as compared with 23.19 per cent. for the corresponding week last year.

For the week ended November 20:—

	1912.	1011.
Effective receipts (after deducting loss by exchange)	$16,174.51	$13,164.38
Passengers carried	823,813	629,571
Car miles run	53,544	48,395

The loss by exchange of subsidiary coinage for the week was equal to 23.20 per cent. of the gross cash collected on the cars as compared with 23.44 per cent. for the corresponding week last year.

The returns for ten months ended October 31 are as under:—

Effective receipts (after deducting loss by exchange)	$662,036.40	$514,209.49
Passengers carried	33,872,338	21,379,520
Car miles run	2,295,535	1,807,327

The loss by exchange of subsidiary coinage for the period was $201,940.61 equal to 24.86 per cent. of the gross cash collected on the cars, as compared with $134,110.79 equal to 22.72 per cent. for the corresponding period last year.

SHANGHAI-NANKING RAILWAY RETURNS

The following figures of traffic returns (approximately) for the week ended November 2, are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries earnings.	Total.
	$	$	$
1912	40,521	9,747	50,278
1911	67,700	7,829	75.538
Increase.	—	1,918	—
Decrease.	27,178	—	25,260

For forty-four Weeks.

Year.	Passengers.	Goods and Sundries	Total.
	$	$	$
1912	1,897.429	340,713	2,238,142
1911	1,532,652	258,815	1,791,467
Increase	364,777	81,898	446,675

For the week ended November 9:

Year.	Passengers.	Goods and Sundries earnings.	Total.
	$	$	$
1912	35,232	7,638	42.870
1911	61,607	7,086	68,693
Increase.	—	552	—
Decrease.	26,375	—	25,823

For forty-five Weeks.

Year.	Passengers.	Goods and Sundries	Total.
	$	$	$
1912	1.932,661	348,351	2,281,012
1911	1,594,259	265,901	1,860,160
Increase.	338,402	82,450	420,852
Decrease.	—	—	—

For the week ended November 16:

Year.	Passengers.	Goods and Sundries earnings.	Total.
	$	$	$
1912	43.042	10,108	53.150
1911	46,006	7.087	53,093
Increase.	—	3,021	57
Decrease.	2,964	—	—

For forty-six Weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1912	1,975,703	358,459	2,334,162
1911	1,640.265	272,988	1,913,253
Increase	335,438	85,461	420,909
Decrease.	—	—	—

A telegram, addressed by the Chinese Chambers of Commerce of Shanghai and Chinkiang to the Ministry of Communications at Peking, and republished in the Chinese Press, reads:—

As requested by the firms and merchants of Chinkiang interested in the business of transporting cargoes, who jointly submit that, owing to the inadequate provision of freight cars both on the Shanghai-Nanking and the Tientsin-Pukou Railways, much delay has been caused in the transport of cargo, which has a detrimental effect both upon commerce and upon the development of railway traffic. They assert that the Tientsin-Pukou Railway has consented to increase, somewhat, the accommodation for cargo, but the Shanghai-Nanking Railway has not yet vouchsafed any definite arrangement. They therefore earnestly pray that a telegraphic request be addressed to you for an order to be issued to all the stations to add more freight cars without delay, etc. We beg to ask your Ministry speedily to order the stations, etc.

ELECTRIC RAILWAY IN JAPAN

Mr. S. Furukawa, Director of the Central Office of the Japanese Imperial Government Railways, recently stated to a *Japan Advertiser* reporter that the scheme to put down an electric railway between Tokyo and Yokohama contemplates the substitution of electricity for steam not only from Tokyo to Yokohama, but from the latter point clear through to Kamakura, the present traffic being limited to the Tokaido, but that at the outset Yokohama would be the terminus of the electric road.

The new electric double-track from Gofukubashi, Tokyo, to Takashima-cho, Yokohama, will be reserved wholly for passenger traffic, and an entirely distinct steam line for goods is being built skirting the coast to the left of the electric route from Tokyo direction as far as Kamakura. The existing steam line will pass Kanagawa and thence proceed to Hiranuma and beyond, the line to Yokohama being abolished. For the new electric route the lines have already been laid from Shimbashi to Tsurumi.

The single overhead trolley system is being adopted, and the power-house is now under construction at Kawasaki. As far as is now known, each train will be made up of three bogie coaches, first, second, and third class, and will provide seating accommodation for more than two hundred persons.

An approximate estimate of the total cost of the new electric line, tracks, buildings, and rolling stock inclusive, is eleven million yen.

Korean Railways.—The Chosen Railway coaches which have been fitted with the Stone system of electric lighting were placed in service in October. The lighting is carried out by means of a dynamo and battery of accumulators suspended from the underframe of each coach. The equipments have been supplied by Messrs. J. Stone and Co. Ltd., Deptford, London. When the train is running, the dynamo supplies the current to the lamps and fans. When the train stops, the dynamo is automatically disconnected and the current is supplied by the battery.

In the sleeping cars, by means of an ingenious arrangement of switches, a bright light is obtained until the passenger wishes to retire, when he can either switch the lamps entirely or can turn them down so as to burn dimly during the night time.

The initial trials having proved successful, the Railway authorities have decided to equip the whole of the coaches, including third class, with electric light before the end to the present year.

Mr. Powell, the popular representative of Messrs. J. Stone & Co., is to be congratulated on the successful installation.

Szechuan-Hankow Railway.—General Li Yuan-hung, of Wuchang, has given an order to the effect that the accounts of the Szechuan-Hankow Railway be squared so that the work may begin soon. It is reported that Mr. Linow, the German Chief Engineer of the Tientsin-Pukow line, has been appointed by the Chinese Government as superintending Engineer for the German part of the Hankow-Szechuan line (Hankow-Ichang.)

At a conference held by General Li, Civil Governor Liu of Hupeh and the managers of railway affairs it was decided that the Szechuan-Hankow and Canton-Hankow Railways should be nationalized. It was arranged that all the material for the construction of the railway purchased by the private capitalists should be redeemed by the Government. The funds now reserved by the "people's Railway Company" may be invested in other commercial enterprises. The Company is authorized to construct the tributary lines in connection with the trunk railway.

The Peking Tramways.—The construction of the tramways in Peking, it was recently reported, had been placed in the hands of Mr. Chen Hsien-chu, who was said to have made full plans to raise a capital of $3,000,000. Mr. Chen was reported to have already obtained $1,000,000 which it was said would soon be remitted from Shanghai. As soon as the rules and regulations have been passed, the remaining $2,000,000 was to be raised in the provinces. It has been decided to have two main lines outside and inside the city, and also to have a number of branch lines to Hsichihmen and other important point. Latest reports, however, state that there has been a hitch in the financial arrangements, and it is reported that the contract is likely, after all, to go to a German firm.

The Hukuang Line.—According to a telegram from Changsha, under date of November 18, work on the Hunan section on the trunk line from Canton to Hankow has been resumed. It was interrupted by the revolution and the later negotiations for a change of the original agreement to fit in with the new conditions. Mr. Collinson, the engineer-in-chief, and his party, are said to be at work on the northern end and on the Hupeh border, whilst at Chenchow, in the south of the province, Mr. Dees and his party are surveying.

Russian Endeavors.—News from Peking is to the effect that Russia has sent a demand to the Peking Government that the franchise for the construction of a railway between Moscow and Peking be given to Russians, but the Government has declined to grant this request.

A Harbin newspaper states that the Russo-Mongolian protocol provides for the construction of a railway from Kiakhta to Urga.

Some Russians have been granted by the Mongolian authorities at Hailar the desired franchise for the opening of a motor car service between Manchouli, Kulun, and Hailar.

Penang Hill Line.—At a recent meeting of the Penang Legislative Council it was decided to vote $100,000 for the construction of a railway to the summit of the hill—a scheme for which the Governor hoped would be evolved before the end of the year.

Tientsin-Pukow Line.—The opening ceremony of the Tientsin-Pukow line is to take place on December 1. There will be a function at Pukow and Tientsin, the latter being the most important. The Yellow River Bridge (which was fully described in the October number of the FAR EASTERN REVIEW), was handed over to the Chinese authorities on November 16.

Light-rail Service at Kaiyuan.—The desired permission for the extension of the existing light-rail service at the Railway Town of Kaiyuan to the other parts of the town was given to the applicant, Mr. K. Kondo, Manager of the Sung Mow & Co., Tiehling, on Sept. 29. The work of extension will be commenced shortly.

Yellow River Bridge.—The last bolt of the Yellow River bridge on the Tientsin-Pukou Railway was riveted on November 16 in the presence of the Governor of Shantung and the chief engineers of the German and British sections of the railway, M. Borkowitz, engineer of the bridge, and large crowds of foreigners and Chinese. Regular through traffic will begin on December 1, when the Minister of Posts and Communications will open the line.

壹百念七號

上海四川路

THE FAR EASTERN REVIEW

遠東時報

Engineering
Finance ❋ Commerce

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PROPOSALS FOR CEMENT

of 8 catties per head Kweichou and Yunnan would require 40,000,000 catties. On this basis I am forced to the conclusion that the annual production of salt in Szechuan amounts to not less than 484,000,000 catties. This, however, does not include what is used in pickling, salting, and other industries, and I am inclined to put the total output at about 500,000,000 catties, equivalent to some 300,000 tons. It may be asked, how does this compare with other estimates? I take two writers on this subject. One gives 206,181,600 catties as the total production, which would place each individual in this province alone on the altogether inadequate allowance of about 6 Chinese ounces per month, or 4½ catties a year; the other states that he considers the production of the districts for which the T'o River is the outlet to be 600,000 tons, i.e. 1,008,000,000 catties, which would give each inhabitant of Szechuan over 22 catties a year, a manifest superabundance derived from only one, but indoubtedly the richest, salt area in the province.

"The Salt Commissioner's figures fall slightly short of my estimate, but they do not cover illicit salt, which is produced in considerable quantities, and eludes official cognizance. Of this illicit salt it is impossible to form any trustworthy estimate. Some would have me believe it amounts to 50 per cent. of what is controlled by Government, but if even 10 per cent. be added to the Commissioner's figures the result exceeds 500,000,000 catties or about 300,000 tons. If, then, 20 cash be taken as the cost price of production of this amount, the total value at the wells is Tls. 8,607,265.

"At the centres of production salt, after payment of the Government tax, is retailed for consumption within limited areas; but salt intended for consumption throughout Szechuan generally is transported under Government certificate, and at destination retailed under licence. The retail price is also fixed by Government, and varies from time to time. The present price at Chengtu is 51 cash, or less than 1d. a lb."

[It must be understood that no claim is made to originality in this article. Various authors who have made personal studies with regard to this subject have been freely consulted, in order that a compilation might be made giving a fairly accurate idea of the past and present method of controlling and manufacturing the product. Special acknowledgment has to be made to the following: F. Hirth, "Notes on the Early History of the Salt Monopoly in China," ("Journal of the China Branch of the Royal Asiatic Society"); Arthur von Rosthorn, "The Salt Administration of Szechuan" ("Journal of the China Branch of the Royal Asiatic Society"); E. H. Parker, "The Salt Revenue of China" ("Journal of the China Branch of the Royal Asiatic Society"); P. Zwehtkoff, "Remarks on the Production of Salt in China" ("Journal of the China Branch of the Royal Asiatic Society"); Dr. J. Edkins, "Banking and Prices in China,"; H. B. Morse, "Trade and Administration of the Chinese Empire" E. S. Williams, "Taxation in China" ("Quarterly Journal of Economics"); Masnoske Odagiri and Kokichi Midzuno, "Salt Gabelle Revenue of China;" "Report by Consul-General Hosie on the Province of Szechuan;" and Maritime Customs' Reports.]

TOKYO INDUSTRIAL EXHIBITION

The estimated expenditure, of 950,000 *yen*, for the Industrial Exhibition to be held in Tokyo in the same year in which the coronation of H.M. the Emperor will take place, has been submitted to the Municipal Council. The amount is thus allotted:—176,000 *yen* for 1913-1914; 724,000 *yen* for 1914-1915; and 50,000 *yen* for 1915-1916. A building covering 2,800 *tsubo* will be completed within next year and in 1914 the main building, covering over 10,000 *tsubo* will be erectedf or use from August to December. No opposition is offered to the scheme from any quarter whatever, but in view of the impoverished condition of all available sources of revenue, how to meet the required expenditure will prove a tough question to solve, says the *Jiji*.

INDIAN RAILWAY EARNINGS

The statement of the approximate gross earnings of the Indian Railways shows that for the period, April 1st to Octr. 26th, 1912, the total earnings of State and Guaranteed Railways have risen to Rs. 3,066¼ lakhs, which is no less than Rs. 363 lakhs better than for the same period last year. The principal contributors to this increase are the Bengal-Nagpur with Rs. 59¼ lakhs: East Indian with Rs. 73¾ lakhs: Great Indian Peninsula with Rs. 50¾ lakhs: Madras and Southern Maharata with Rs. 10½ lakhs; North Western with Rs. 95½ lakhs: Oudh and Rohilkhand with Rs. 26¾, lakhs: and Rajputana Malwa with Rs. 24½ lakhs.

DEVELOPING THE PHILIPPINES

AMERICA-PHILIPPINE COMPANY

Another splendid development investment in the Philippines is promised in the recently organized and incorporated America Philippine company, reports the *Manila* Times of December 4, and continues:—Composed of a group of well known business men and bankers of New York, Chicago, St. Louis, Kansas City, Detroit, Cincinnati, Indianapolis, Minneapolis and other cities it proposes to interest itself in the development of the products of the Philippines. It has a capital stock of P. 10,000,000, fully subscribed and its members are capable of furnishing any further capital that may be needed.

Full details of the plans of the company have not been received here but it is known that one of the plans of the new company is to interest Filipinos in the several local enterprises that will be undertaken and to induce them to share in them, to introduce a system of profit sharing in which all employes will have participation and at the inception of any business or enterprise to inaugurate a system of pensions for employes to be paid when old age prevents full service.

A party representing the company will leave New York about the middle of December and will arrive here about the middle of January. They are coming for a general survey of the islands and a study of resources, needs and business opportunities. They will be accompanied by experts in fibers, sugar, tobacco, hardwood and power and will be in a position to expert any proposition that is presented to them.

Speaking of the plan of the company a man who has some knowledge of the circumstances under which it was formed said: "I am not myself in possession of full details but I am convinced that the organization of the America Philippine company is a fortunate circumstance for all of us. It means an opportunity to secure, under fair conditions, the money that is needed to develop the Philippines. This company has ample capital and can secure as much more as is desirable. And it comes in a friendly spirit. It wants to join with the people of the islands in developing the resources of the islands and with mutual profit and benefit. I know that it has plans of profit sharing for its employes and that in itself is a good line on its liberal spirit and policy. Capital is our great need, not that which would exploit us for its benefit, but capital that would develop the country and benefit the country and the people of the country. We need money to finance our great agricultural industries and this company can furnish it. It is my personal intention to see that when the agents of this company arrive here they examine the problem of furnishing money for the great agricultural industries of the islands. I am pleased for another reason. The formation of this company at this time shows a confidence in the stability and future of the Philippines that will be reassuring to any who have permitted their faith to waver."

FAR EASTERN CABLES

EASTERN EXTENSION COMPANY'S PLANS

The 81st ordinary general meeting of the Eastern Telegraph Company (Limited) was held on November 13, at Electra House, Finsbury-pavement, Sir John Wolff Barry, K.C.B., presiding.

The Chairman remarked that the gross revenue for the half-year ended June 30 last exceeded that of any previous half-year, while the improvement shown continued to be well maintained. The gross revenue amounted, in round figures, to £746,700, or an increase of £74,300 over those of the June half of 1911. Message receipts showed an increase of £66,500, which was spread over practically every branch of the company's system. The introduction of deferred messages, to which he referred at their last meeting, had also created a new source of revenue, while not adversely affecting their ordinary fully-paid traffic. The total ordinary working expenses amounted, in round figures, to £306,000, or an increase of £14,700 over those for the corresponding half-year of 1911. The growth in the volume of traffic necessarily entailed more labour and naturally tended to generally increased expenditure under practically all headings. In view of the continued depreciation in the market value of their reserve fund investments a further sum of £50,000 had been transferred from the general reserve fund, and the amount set aside on account of investment fluctuations now stood at £300,000.

The increasing volume of business on the company's cables, which was proportionately greater than the increase of net revenue, pointed to the necessity of strengthening their cable capacity east of Suez, and the directors had in view the laying of new and important cables from that station eastward so soon as the necessary landing rights were granted. The Eastern Extension Company also proposed at the same time to strengthen their means of communication in the Far East. The new cables would, of course, involve considerable expenditure, which would be met out of the normal increase of revenue. Their reserves enabled them to deal with these matters without any anxiety regarding the usual dividends and bonus, or without increasing their capital.

THE YELLOW RIVER BRIDGE

On November 16 the last rivet was driven at the Hoangho bridge built by the Maschinenfabrik Augsburg-Nurnberg, near Tsinanfu. Amongst the guests present there were the Tutuh of Shantung, the Commander of the fifth division, the directors Ye and Meng of the Ministry of Public Works (representing the Minister), Messrs. Hsiao, Hsu and Liu, directors of the Northern part of the Tientsin-Pukow Railway, and Mr. Chao of the southern part, Captain Hopfner, representing the Governor of Kiautschou, members of the German Consulates of Tientsin and Tsinanfu, and of the British consulate of Tsinanfu, officers of the garrisons of Tsingtau, Mr. Cordes, Manager of the Deutsch-Asiatische Bank at Peking, Mr. Dorpmuller, Engineer-in-Chief of the Tientsin-Pukow Railway, and his staff, and many other guests with their ladies from Peking, Tientsin, Tsingtau, Nanking and Shanghai.

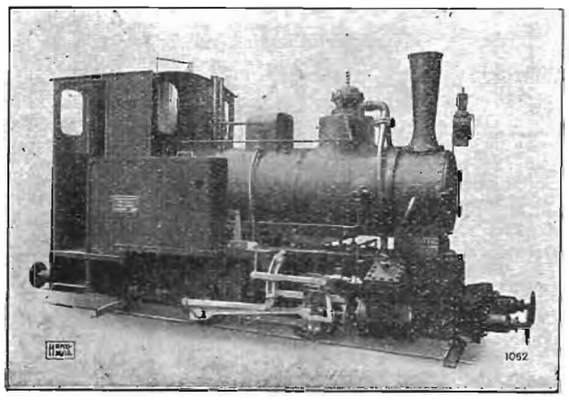

FIG. 1

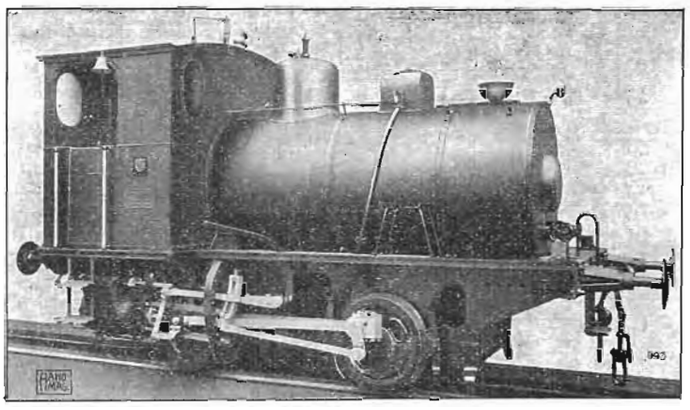

FIG. 2

LOCOMOTIVES

HANNOVERSCHE MASCHINENBAU-ACTIEN-GESELLSCHAFT, VORMALS GEORG EGESTORFF, HANNOVER-LINDEN.

(General-Agents for China: H. DIEDERICHSEN & Co.)

Locomotives of all sizes and for every gauge of line are built in the Works of the Hanomag. *Fig. 1* shows a 50 H.P. narrow gauge locomotive for constructor's use, such as are commonly used for the transport of earth on excavating work and for building purposes. In constructing such locomotives it must first of all be taken into consideration that sharp curves even in badly laid tracks must be negotiated without the least difficulty. On account of the light section of rails generally used on such temporary tracks the axle pressure must be reduced as far as possible, the boiler must not be too high, so that the danger of the engines' toppling over may be obviated if the latter enters a curve at a high speed. As for the rest, all parts must be as simple as possible, because as a rule no special care can be taken in handling such engines. Complicated parts have, therefore, to be strictly avoided when building such engines. In building the locomotive shown in fig. 1 these points have been strictly observed. In order to allow the driver to have an unimpeded view of the track in front of him, the feed water is stored in tanks built between the frame plates, which tanks help at the same time to stiffen the latter.

A particularly interesting locomotive of a special type is shown in *fig. 2*. This is a fireless locomotive such as the Hanomag has placed on the market, a great number of which are giving the best satisfaction in service. The boiler consists solely of a water tank filled to two-thirds of its capacity with water and protected by special insulating materials from loss of heat through radiation. The working of this engine is as follows:

The water tank is first heated by introducing into it steam from a stationary boiler plant. As soon as the pressure of the steam in the tank has nearly reached that of the stationary boiler plant the supply of steam is cut off. The engine can then be placed in service and perform work corresponding to the amount of heat introduced into the tank. The latter has to be recharged in intervals of 2 to 6 hours according to the conditions of service. The loss in pressure of the steam brought about by radiation is quite insignificant, as has been proved by experience.

Fireless locomotives of this kind have speedily found a ready market in works where the danger of fire exists, such as powder and ammunition factories and gas works and have proved to be greatly advantageous in industrial concerns where shunting work is light. The danger of the boiler of an engine of this kind exploding is of course reduced to nil. No attention need be paid to the boiler after it has been charged with steam.

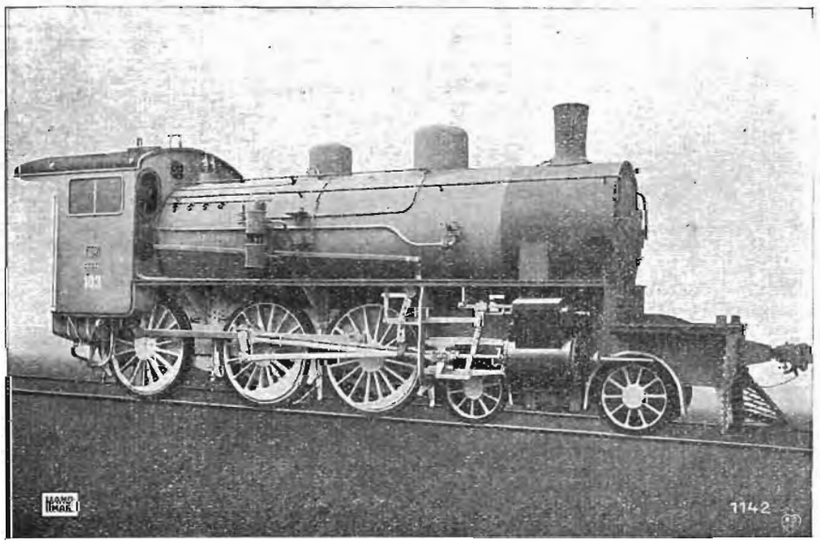

FIG. 3

Fig. 3 shows a 4-6-0 type of express train engine and tender with two four wheeled bogies, which locomotive has been designed and supplied by the Hanomag for the Tientsin-Pukow Line of the Chinese State Railways. The construction of this engine is fully adapted to the particular requirements on Chinese Railways. The boiler is fitted with a specially large grate and fire box in order to ensure its good steaming capacity.

Fig. 4 shows a very remarkable type of locomotive. This is a 2-12-2 type of goods locomotive for 1067 mm gauge which has been designed and constructed by the Hanomag to the order of the Dutch State Railways, Java. The greatest wheel pressure admissible on lines of these latter railways is 4,750 kilos, whilst curves as sharp as 140 m in radius have frequently to be taken. The engine was adapted for taking curves with ease without having recourse to complicated expedients, by simply giving side play to the first and sixth coupled axles which are constructed on the Gölsdorf principle. The flanges of the wheels of the two middle axles were turned down 5 mm more than the others. A lateral play of the first and last coupled axles of 30 mm on each side, sufficed to allow of the engine taking the curves with the necessary ease. This engine has given splendid satisfaction in service. The locomotives took the curves with the greatest ease. In the case of this large

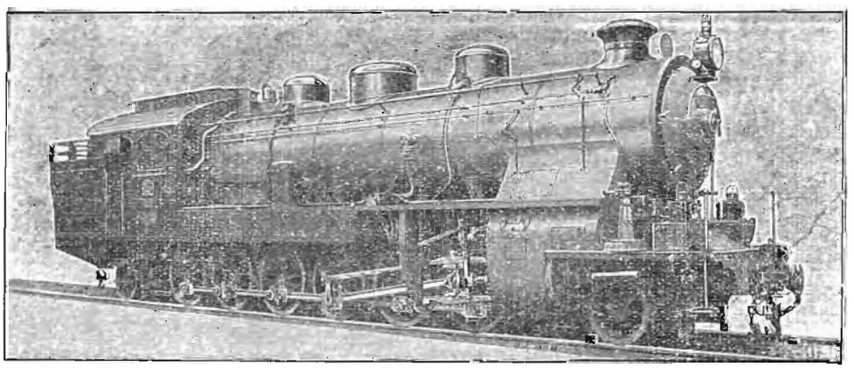

FIG. 4

FAR EASTERN RAILWAYS

China's Trunk Lines.—The Chinese Ministry of Communications has proposed four trunk lines, two running north and south and two running east and west, through the country. The proposal was submitted to the members of the Cabinet and met with their approval.

I: the Central longitudinal line, beginning from Mongolia running through Peking and Shansi, turning southward to Hankow and thence to Chiulung. Peking is to be the centre of this line.

II: the Eastern longitudinal line, beginning from Manchuria, passing through Chihli, Shantung, Kiangsu, and Chekiang and ultimately reaching Fukien and Kwangtung.

III: the Northern latitudinal line, beginning from Haichow passing through Honan and Tungkuan and Kansu and thence to Ili meeting the Central Asiatic Railway (?).

IV: the Central latitudinal line, beginning at the Nanking terminus of the Nanking-Shanghai Railway passing through Wuchang, entering Szechuan.

Siam Railways.—The Petchaburi line, Siam, will be placed under the control of the Southern Line administration, of the Royal State Railways, from the 1st April next. This change was inevitable, the line to Petchaburi being merely a section of the Southern Line.

Heilungkiang-Mukden Line.—The long pending issue of constructing a Chinese railway from Heilungkiang either to Tiehling or Kaiyuan appears to have been shelved after all in favour of the proposed construction of a line between Heilungkiang and Mukden, reports the *China Critic*. The Chinese authorities have evidently avoided disappointing the people of either Tiehling or Kaiyuan which two towns regard each other as a rival. Moreover, it would be only natural for them to choose having this new railway connected with their own line at Mukden rather than with the S. M. Railway at Tiehling or Kaiyuan.

Chekiang Railway.—The construction of the Ningpo-Shaoshing section of the Chekiang Railway is proceeding apace at this end of the line, writes a Ningpo correspondent. Metals have been laid to a distance of about fifteen *li*, and a construction train is kept busy in the transport of materials. The station platforms are being put into shape, and it is reported that trains will be running to Shaoshing early in the summer of 1913. It is difficult to obtain accurate information as to the condition of the funds. Much of the money promised in the shares issued two years ago has certainly not been forthcoming, and recent endeavors to get more shares taken up have not been successful. No beginning has yet been made with the important bridge over the Pahkuan river, but it is at least likely that at the present rate of progress trains will be running in 1913 between Ningpo and Yuyao.

A correspondent writing to the *China Press* on December 3 said:—There is now a train running from Ningpo, at the salt gate, where the station is, to Bah-Saw and further on every day, sometimes twice a day. The fare to Bah-Saw is five cents. Hundreds of Chinese travel by it "just for the fun of the thing." It is said that the train soon will be making trips twice daily to Sze-hze, a place some thirty miles from Ningpo. They are building the station at Ningpo and will begin these trips at Christmas.

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended November 23, were issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries earnings	Total.
	$	$	$
1912	43,583	10,306	53,889
1911	36,358	7,503	43,861
Increase	7,225	2,803	10,028
Decrease	—	—	—

For forty-seven weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1912	2,019,286	368,765	2,388,051
1911	1,676,623	280,491	1,957,114
Increase ...	342,663	88,274	430,937
Decrease ...	—	—	—

For the week ended November 30:—

Year.	Passengers.	Goods and Sundries earnings	Total.
	$	$	$
1912	45,152	7,566	52,718
1911	36,150	5,700	41,850
Increase	9,002	1,866	10,688
Decrease	—	—	—

For forty-eight weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1912	2,064,438	376,331	2,440,769
1911	1,712,773	286,191	1,998,964
Increase ...	351,665	90,140	441,805
Decrease ...	—	—	—

For the week ended December 7

Year.	Passengers.	Goods and Sundries earnings.	Total.
	$	$	$
1912	43,153	10,567	53,720
1911	50,986	6,295	57,281
Increase	—	4,272	—
Decrease	7,833	—	3,561

For forty-nine Weeks,

Year.	Passengers	Goods and Sundries earnings.	Total.
	$	$	$
1912	2,107,501	386,808	2,494,489
1911	1,703,759	292,486	2,050,215
Increase ...	343,832	94,412	438,244
Decrease ...	—	—	—

Hokuriku Line.—The railway service between Nadachi and Itoigawa, Japan, a distance of some 16 miles, on the Hokuriku line was to be opened to the public on December 8. With the section opened the entire Hokuriku Railway will be ready for traffic except between Itoigawa and Aomi, about three miles, which will not be opened till next February, owing to difficulties of construction.

Kyoto Station.—The Railway Board of Japan has a project to erect a new and enlarged station in Kyoto in place of the present one at an outlay of three million yen, which is included in the next year's Budget. The site of the new station will be a little to the south of the present one, and will cover about an acre.

Hokkaido Railway.—The express service on the Hakodate-Kushiro section of the Hokkaido Railway line, which was opened last June, was to be suspended on and after the 1st of December owing to the setting in of the snow season.

Japanese Government Railways.—The receipts of the Japanese Railway Board for the current year are calculated from the figures collected up to the end of October to show an increase of 8,000,000 *yen* over the estimated amount of 100,092,658 *yen*. The next fiscal year's estimate of revenue from the same source will therefore be placed at over 110,000,000 *yen*.

Tokyo-Narita Line.—The first section of the Keisei Electric Railway between Oshiage (Honjo, Tokyo) and Ichikawa, Chiba Prefecture, Japan, was opened to traffic on November 3. The line, which is to be extended to Narita in future, starts from Oshiage near the starting point of the Tobu Railway, and touching at Hikifune, Yotsugi, Tateishi and Magane, extends to Ichikawa. A branch line between Ichikawa and Shibamata was also opened the same day. Among noted places along the line are Konodai Hill, a famous old battlefield near Ichikawa, the peach orchards at Ichikawa, the Yoshino Garden at Yotsugi noted for iris, and other flowers, the Taishakuten Shrine at Shibamata, and the plum trees at Kinegawa, near Oshiage. The hand-car tramway between Kanamachi and Shibamata will be purchased by the company and converted into an electric line.

New Japanese Railway.—The Imperial Japanese Government Railway between Tsuruga (port for Vladivostok) and Shin Maizuru will not be opened before 1914, owing to engineering difficulties, several tunnels having to be bored. All land between the termini has been purchased and survey work is nearing completion. Construction began in October on the Kohama section, and work on the Tsuruga-Minami-Saigo section will begin before the end of year. The opening of this line will effect an extraordinary economic change in this region, hitherto only accessible by boat or long journeys overland.

SOUTH MANCHURIA RAILWAY

The account department of the South Manchurian Railway Company is now busy preparin an estimate of expenses for the fiscal year. It is expected that the large sum of yen 15,000,000 is needed to carry on the undertakings of new industries of the company, but that such an amount cannot be secured from the balance money from shares. Either new shares or debentures must be issued to make up the deficiency. The company, however, has not yet decided what steps to take, and it is necessary to secure the consent of the Government for the proposed expenditure for the fiscal year before new shares can be issued.

The South Manchuria Railway was to distribute on December 12 to its shareholders according to the Shareholders' Register, as it stood on December 1, a sum of money amounting to half the annual dividend at the rate of 6%.

The coke factory, constructed at Chencinchai on the plans drawn up by Mr. Suzuki, Manager of the South Manchuria Railway Company's Gas Department, has had all machinery and other interior equipments installed. The railway siding from the Fushun Colliery to the factory is not completed yet, and the unfinished work is likely to be resumed early in spring.

Accordingly the factory itself will not start operations before spring. The factory will be capable of putting out 10 tons of coke a day. The output is to be offered for sale among the Chinese at Mukden. Liaoyang, Yingkou, Tiehling Changchun, &c.

The principal works proposed to be undertaken by the South Manchuria Railway Company in 1913 are the construction of harbours at Dairen, and the improvement of rolling stock and tracks. The *Asahi* learns that the new works of the company will not be postponed—as seems to be believed by many—as the result of the negative financial policy of the Government. It is the bounden duty of the Company to perfect the railway accommodation in Manchuria, and works to this end cannot be allowed to be neglected even for a day, in order to develop the resources of Manchuria. For these reasons, it is confidently asserted that the Company will carry out its projected works, quite independent of the financial policy of the Government in Tokyo. In the event of funds at the command of the company falling short, the directors will not hesitate to issue the shares which are held in reserve.

The further extension of the market for Fushun coal has been occupying the attention of the Company as the output of coal increases. The Company is now shipping the coal to Korea and Formosa in addition to North China. The projected extension of sale to Japan Proper has been abandoned, as it is considered inadvisable to open competition with the collieries in Japan Proper and inexpedient for a semi-Government company to "oppress" private business companies. The Company has, therefore, decided to ship coal to South China and Singapore next spring. But when Fushun coal is exported to South China, Singapore, and other places, remarks the Osaka journal, competition will be entered upon with the collieries in Japan Proper, which make these places their principal foreign markets.

The South Manchurian Railway Traffic Returns for the month of November give Y. 1,760,198 being an increase by Y. 243,150 over the corresponding period of last year. The aggregate earnings since last April, the beginning of the present fiscal year, are Y. 10,064,584 which sum is larger by Y. 949,319 than the aggregate figure for the corresponding period of last year.

The 64 lb. rails which were used by the Russians in the construction of what now forms the main line of the South Manchuria Railway have been replaced by 80 lb. rails by the S.M.R. management in the section lying south of Mukden and another section between Szupingkai and Shuangmiaotzu. The same management has the 5 mile section between Changtu and Manching being replaced with 70 lb. rails during the present fiscal year. It will attend to the about 12 mile section between Manching and Shuangmiaotzu during the next fiscal year. The remainder will also receive its attention in the succeeding years.

The South Manchuria Railway designs to found a new slaughter house at Mukden, at the coast of $25,000, and intends to import and kill Mongolian cattle and thus to offer good beef to all markets in South Manchuria.

Kirin-Changchun Railway.—The *Manchuria Daily News* of November 21 reported that about 10 carloads of Tobacco leaves were arriving daily at Changchun by the Kirin-Changchun Railway, and were being transported to Mukden and Yingkou. One or two carloads of medicinal herbs and hemp were arriving daily at Changchun from the same source. About the same quantity of Kirin timber was arriving there daily.

The revised train schedule for the Kirin-Changchun Railway, came into operation from November 25 as follows:—

	East Bound Express.	Ordinary.
Lv.—Changchun.....	7.00 a.m.	2.00.p.m.
Ar.—Kirin 11.30	„	8.15 „

West Bound.

Lv.—Kirin	6.00 a.m.	2.40 p.m.
Ar.—Changchun.....11.10	„	7.20 „

The Korean Railways:—The railway authorities of the Government-General of Korea have ordered twelve locomotives of a new pattern from an American firm in New York. The *Seoul Press* learns that the same authorities, having found it necessary to increase the number of freight cars, are now having 165 cars constructed at the workshops at Yongsan and Cholyang. These cars are expected to be completed by the end of March next. By placing the new cars on the service the authorities hope to increase the transport capacity by about 20 per cent.

Seoul-Wonsan Railway. — The opening ceremony of the Yonchon-Cholwon section of the Seoul-Wonsan Railway, fifteen miles in length was successfully held on October 26 at Cholwon, in the presence of Count Terauchi, Governor-General. A special train was run from Nandaimon station carrying some two hundred guests specially invited for the occasion. The distance between Seoul and Cholwon is some 61 miles with ten intermediate stations, and is reached in four hours by train. It will be remembered, says the *Seoul Press*, that the distance was formerly barely covered in three days, the road being bad and the means of communication imperfect. It may also be noted in this connection that Cholwon is situated on a vast extent of highland, covering an area of some 69,000 *cho*, with a comparatively small population of only 27,000 forming 6,100 households. The train arrived at Cholwon at 1.30 p.m. and the guests were immediately ushered into a temporary saloon specially provided for the occasion. It was built up of railway sleepers and was an object of general approval as an excellent example of resourcefulness. After a short address by Dr. Ohya, Director of the Chosen Railway Bureau, His Excellency the Governor-General spoke for a while and proposed a toast which was heartily responded to. The guests were then entertained to a cold collation.

Kirin-Hoireng Line.—It is understood that Japan intends to proceed forthwith the construction of the Kirin-Hoireng Railway, which will be the last link in the military defences of Korea and South Manchuria.

Yalu Railway Bridge.—The suspension of the operation of the swing-bridge of the Yalu Railway Bridge to the reopening of the Yalu to navigation next spring was announced by the Government-General of Chosen on November 25.

Burma Railways Dividend.—The final distribution of 1½ per cent. is recommended by the Burma Railways on account of surplus profits for the year ended June 30, 1912. This, with the previous distribution of 15s. per cent., brings the total surplus to £2 5s. for the year, which with the guaranteed interest of £2 10s. makes a total yield of £4 14s. for the year, income tax being deducted before payments.

Railroad Manager Wanted.—Applications are invited for the position of general manager of the New Zealand Government Railways. The salary is $15,000 U.S. Currency a year, and the term of appointment five years. Further particulars and forms of application may be obtained from the High Commissioner for New Zealand, 13 Victoria Street, London, S.W., England. The New Zealand Government railway system includes 2,750 miles. The revenue in 1910 was $15,816,000 and the expenditure $10,550,000, the goods carried 5,490,000 tons, the passengers numbering 11,141,000.

The Tcheng-tai Railway.—According to the returns to September 15 last the earnings of the Tcheng-tai Railway (from Shihchiachaung, on the Peking-Hankow line to Taiyuan-fu, the capital of Shansi province) are recovering from the effects of the Revolution. The line was commenced in 1904, and in October, 1907, was opened for traffic over its whole length of 151 miles. The receipts for 1910 were $1,756,493.46, whilst for 1911 they fell back to $1,416,699.61, though 1912 (to Sept. 15) saw a recovery of some $324,601.07 over the 1911 returns, the total for this financial year being $1,741,300.68. From September 10 to 15 the receipts from passengers carried were $14,278.90 whilst from goods the returns were $25,145.30.

Shantung Railway Company.—A Tsingtau despatch reports that the Shantung Railway Company will grant rebates on freight rates of from 20 to 40 *per cent.* from January next, in competition with the Tientsin-Pukow Railway.

The Hukuang Railway.—The Hunan section of the main line is again making progress. A party of British engineers left Tientsin on November 20 for the survey—interrupted by the revolution—near Chenchow. Mr. Tan Jenfeng, addressing the shareholders, argued that the expenditure of 6,500,000 (? $) on the short line already completed showed the need of foreign supervision. The Tutuh concurred and the shareholders applauded.

Freight Cars.—Telegrams from Shanghai, Chinkiang, and other places to the Board of Communications state that the number of freight cars on the various railway lines is far from sufficient for the traffic and urge strongly an increase in the numbers.

PERSONAL

Mr. T. Aiga, outgoing Civil Administrator, of Dairen was one of the oldest officials of the Kwangtung Government, having been appointed secretary as far back as 1905, preliminarily to the organization of the Kwangtung Government. In South Manchuria he first took charge of the Chinchou Branch of the Dairen Civil Administration. He demonstrated his executive ability by the extermination of powerful gangs of bandits which had been terrors to the northern part of the Leased Territory. The credit for paving the way to the complete elimination of brigandage from Kwangtung is due to his thoroughness in detail. He was subsequently transferred to the Ryojun Civil Administration as its chief, and then to the Dairen Civil Administration about a year and a half ago.

M. Cazenave, Manager of the Bank of Indo-China, left Peking on December 8 for Paris.

Col. B. Semenow, Assistant Military Attaché to the Russian Embassy at Tokyo, has been transferred to the Embassy at London, where he will serve for the next three years. Previously to his present appointment he was attached to a cavalry regiment at Warsaw. It is not yet known who will succeed Col. Semenow.

Mr. Y. Tahara, Commercial Attaché to the Japanese Embassy in London, has resigned his post.

上海四川路
壹百念七號

THE FAR EASTERN REVIEW

Engineering
Finance Commerce

遠東時報

Vol. IX., No. 8. SHANGHAI—MANILA January, 1913.

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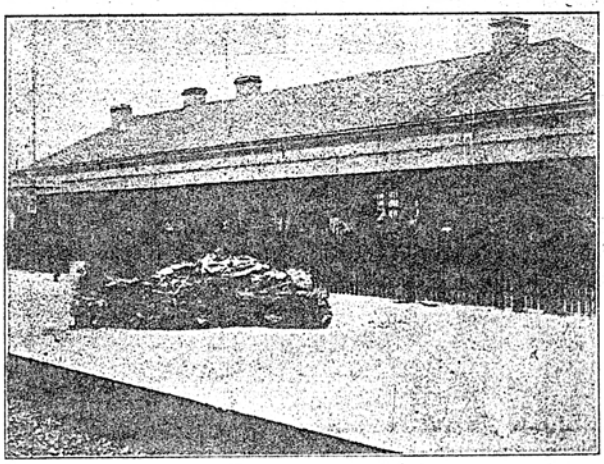
CHU CHI-CHIN
Minister of Posts and Communications

CHINESE GOVERNMENT RAILWAYS

TIENTSIN-PUKOW LINE

Express Passenger Train Service



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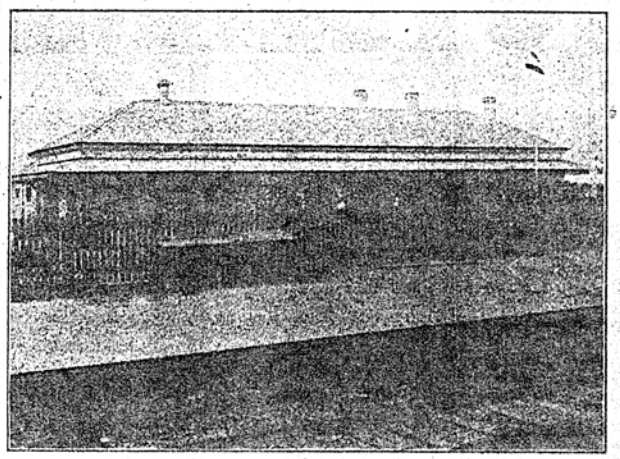

STATION AT PENG-PU

TIENTSIN-PUKOW RAILWAY. BRITISH OR SOUTHERN SECTION

Notice is hereby given that through express service of first, second and third classes with dining and sleeping cars from Tientsin to Pukow has been inaugurated on December 4th, 1912, and until further notice. These trains will leave Pukow on Mondays and Fridays, and Tientsin, on Wednesdays and Saturdays, stopping only at the principal stations en route.

Departure			*Arrival*		
Monday, Friday	Pukow	9.00 A.M.	Tuesday, Saturday	Tientsin	11.07 A.M.
Wednesday, Saturday	Tientsin	1.00 P.M.	Thursday, Sunday	Pukow	3.15 P.M.

Detailed Time Table will be found hereafter in the back pages of this paper.

EXPRESS FARE TABLES

	PUKOW-HSUCHOWFU	HSUCHOWFU-TSINANFU	TSINANFU-TIENTSIN
1st class	$13.90	$13.60	$14.60
2nd ,,	9.30	9.05	9.70
3rd ,,	4.65	4.50	4.90

LUGGAGE ALLOWANCE

1st class, 150 catties; 2nd class, 100 catties; 3rd class, 50 catties.

Excess luggage is charged at one (1) cent per picul per mile on the express trains and half a cent on ordinary trains.

Only first class passengers are entitled to book sleeping berths, at $5.00 per berth.

The Railway ferry steam-launch, lying at the jetty above the Japanese Hulk, will carry passengers across the river forty minutes before the trains leave. Passengers may book their tickets at the office on the ferry jetty.

The ordinary trains running between Pukow-Hsuchowfu, Hsuchowfu-Tsinanfu, and Tsinanfu-Tientsin will continue as before. For time refer to the Time Table.

For further particulars, etc., apply to the Traffic Department at Tientsin or Head Office, Nanking.

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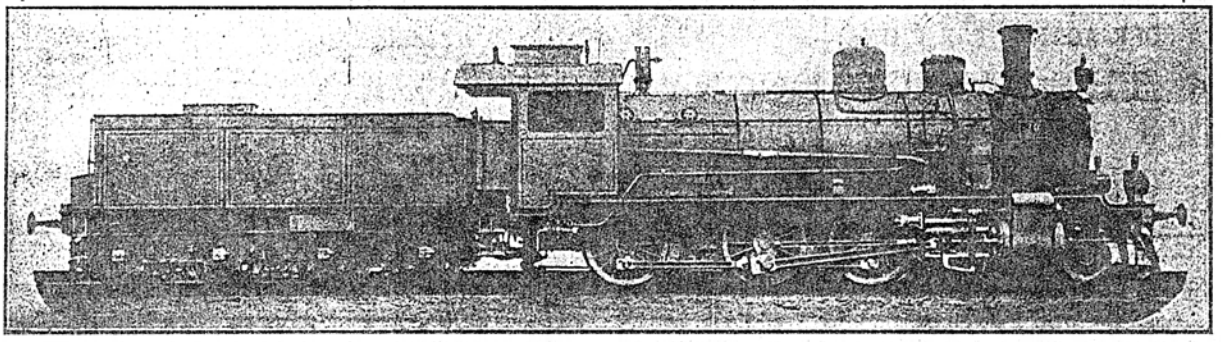
Locos supplied to: SHANTUNG RAILWAY—TIENTSIN-PUKOW RAILWAY
CHEKIANG RAILWAY



4-6-0 GOODS LOCOMOTIVE FOR THE SHANTUNG RAILWAY (CHINA)

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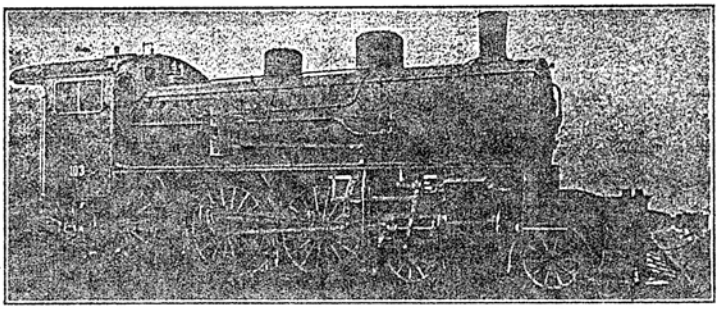

4-6-0 STANDARD GAUGE PASSENGER ENGINE. MPERIAL TIENTSIN-PUKOW RAILWAY

GENERAL-AGENTS FOR CHINA:

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捷成洋行
天津上海

HENSCHEL & SOHN,

CASSELL, GERMANY
ESTABLISHED 1810

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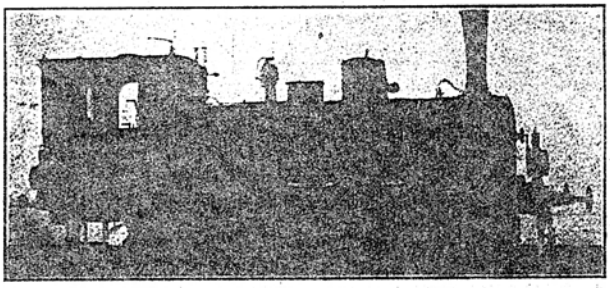
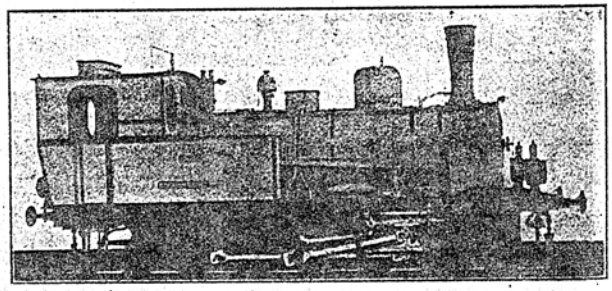
Locomotive Works: CASSEL. Steel Works: HENRICHSHUTTE, HATTINGEN.
Annual Capacity, 800 Locomotives. Total Output exceeds 12,000.
BRUSSELS EXHIBITION, 1910, GRAND PRIX; BUENOS AYRES EXHIBITION, 1911, GRAND PRIX;
TURIN EXHIBITION, 1911, GRAND PRIX.



SIX-WHEEL COUPLED TANK LOCOMOTIVE, BUILT BY HENSCHEL & SOHN, FOR THE HANYANG IRON & STEEL WORKS



SIX-WHEEL COUPLED TANK LOCOMOTIVE, BUILT BY HENSCHEL & SOHN, FOR THE SUNNING RAILWAY, CHINA

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His Excellency Yuan Shih-kai, President of the Republic of China

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. IX. SHANGHAI AND MANILA, JANUARY, 1913 No. 8

THE TIENTSIN-PUKOW RAILWAY

A Detailed Historical and Descriptive Account

The railway system of China has been materially augmented by a valuable trunk line 621 miles in length connecting Tientsin and Pukow. It effects connection between Shanghai, the emporium on the coast, near the mouth of the Yangtsze River, and Peking, the capital of China. What is more important it establishes effective and rapid communication between the middle maritime provinces of China and those of the north, and opens the way of overland travel from the China littoral to Europe, via the trans-Siberian railway. Shanghai is already placed within 36 hours of Peking, as against the previous nearest route of from three to six days. In the near future, with the introduction of more efficient rolling stock and the betterment of traffic organisation, that time will be materially reduced. Under existing conditions a passenger may leave Shanghai at 11 p.m. on Sunday or Thursday, and dine in Peking on Tuesday or Saturday. If he so desires, he may, at Tientsin or Peking, board the express train leaving for Europe on the latter two nights, having no sea to cross on the journey.

The route is destined to become one of the most popular in China. Certainly for communication between Peking and the seaboard it will eclipse all others. As an earning factor it should early demonstrate its unique advantages. At the same time it should be the means of bringing increasing profit to that already prosperous system known as the Chinese Northern railways, and particularly will it feed the chief portion thereof—the Tientsin-Mukden Section—which route must be used to reach Europe from the north. The southern portion of this now practically completed service was opened between Shanghai and Nanking (a distance of 200 miles) in 1908. At Nanking the Yangtsze River has to be crossed by ferry—which system it may never prove profitable to change by bridging owing to the character of the river bottom and the width and volume of the water, though the future may see a train ferry in operation.

The desirability of filling the gap between the existing southern and northern system by connecting Tientsin with Pukow, a town on the northern bank of the Yangtsze River, opposite Nanking, was the subject of discussion for many years. The idea entered the realms of practical effort in 1908. An agreement was then signed according the right of construction to a German and British syndicate on a loan guaranteed by the Chinese Government, and placing the operation of the road after completion in the hand of the Chinese Government, as represented by the Board of Posts and Communications.

THE LOAN AGREEMENT

The line was divided into two sections. The northern portion from Tientsin extended to the Grand Canal, a distance of 385 miles, and was built by German capital. The southern portion, extended from the Grand Canal to Pukow, some 236½ miles, and was built by British capital. The combination of interests in this line may be briefly explained by reference to the early efforts to persuade the Central Government to undertake the enterprise.

On March 6, 1898, an agreement was signed between China and Germany granting the latter

YI KUNG-CHO

DIRECTOR-GENERAL OF RAILWAYS, CHINA

certain railway construction rights, one clause reading as follows:

> "The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinanfu to the boundary of Shantung Province, via Wei-hsien, Tsinchow, Pashan, Tsechuen, and Suiping. The second line will connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinanfu through Laiwuhsien."

This agreement forms the basis of Germany's rights to participation in the Tientsin-Pukow line. The extension in the clause quoted above referred to a line running north and south across Western Shantung. Prior to the signing of this agreement, however, the Chinese Government had granted to a Chinese, Yung Wing, the right to build a line connecting Tientsin with the Yangtsze, by way of Shantung, and on August 23, 1898, a contract was signed for that purpose by a Anglo-American syndicate, for a sum of £5,500,000. A German syndicate in June, 1898, proposed to the Chinese Government to float a loan of £4,500,000 at 5½ per cent., issued at 92 to the Government and reimbursable in 35 years. This offer was refused, but the clash of claims brought about a deadlock which was only solved by an agreement to combine interests. On September 1 and 2, 1898, representatives of the British and Chinese Corporation and the Hongkong and Shanghai Bank conferred with representatives of the German syndicate, and as a result an agreement was evolved as follows:

> "The line from Tientsin and Tsinanfu, or to another point on the northern frontier of the province of Shantung, and the line from the southern point of the province of Shantung to Chinkiang, to be constructed by the Anglo-German Syndicate (meaning the German Syndicate of the one part and the Hongkong and Shanghai Banking Corporation and the British and Chinese Corporation, Limited, on the other part), in the following manner, viz:—
>
> "1.—The capital for both lines to be raised jointly.
>
> "2.—The line from Tientsin to Tsinanfu, or to another point on the northern frontier of the province of Shantung, to be built and equipped and worked by the German group.
>
> "3.—The lines from the southern point of the province of Shantung to Chinkiang to be built and equipped and worked by the English group.
>
> "4.—On completion the line to be worked for joint account."

In addition to a working arrangement with regard to this particular line the parties also defined their spheres of activity in railway enterprise, the Germans restricting themselves to the Yellow River valley and the British to the Yangtsze, a disposal of interests which later gave excuse for much criticism of the British representatives who agreed to the proposals.

Consequent upon this solution of mutual claims the Anglo-German group entered into negotiations with the Chinese Government. On May 10, 1899, a preliminary loan agreement was signed, though progress was ultimately obstructed by the outbreak of the Boxer trouble. Negotiations were not resumed until June, 1902, and the final agreement was not signed until January 13, 1908. That agreement sanctioned the flotation of a loan of £5,000,000 at 5%, issued to the Chinese at 93 and the public at 98¾, for a term of 30 years, repayment to commence at the end of 10 years. The security was a certain portion of the likin and internal revenues of Chihli and Shantung and certain revenues in

Kiangsu. Regarding the administration of the line, Article 17 of the agreement provided that:

> "The construction and control of the railway will be entirely in the hands of the Imperial Chinese Government. For the work of the northern and southern sections respectively the Chinese Government will select and appoint fully qualified German and British Chief Engineers, acceptable to the Syndicate. These two Chief Engineers, shall be under the orders of the Managing-Director, or his duly authorised representative, and will carry out all the wishes of the administration with regards to the plan and construction of the line. They must pay all due respect to the Director-General and the Managing-Director. The terms of their respective agreements will be arranged by the Director-General on his sole authority."

The agreement limited the use to which the loan monies might be put by stating (Article 3) that:

> "The capital will be used for the construction of the line, the purchase of the land and rolling stock, and to meet the current working expenses of the line when in operation, also the payment of the interest on the loan while the line is being constructed."

To avoid peculation, Article 14 provided that:

> "during the period of construction the accounts will be open at any time to an inspector appointed and paid by the Syndicate."

To ensure Chinese control after completion Article 17 stated:

> "On the completion of the line the Imperial ChineseGovernment will administer both sections as one undivided Government railway and will appoint an Engineer-in-chief, who, during the period of the loan shall be a European, without reference to the Syndicate."

These terms were distinctly favorable to China, and the precedent set has been seized upon and will be used to obtain better terms in future agreements The Board of Posts and Communications are convinced that the management of roads should be in the hands of the Government. And in the hands of Government they should be exceedingly profitable, though everything depends not only upon sagacious management, but upon scrupulous treatment of earnings. The European bankers' sole and only object in endeavoring in the past to obtain supervision over railway management and finance were to see to it that all monies were honestly dealt with and the interests of bondholders protected. The opponents of what are now described as "the Tientsin-Pukow terms" declare that the way has been deliberately left open for ruthless squandering and peculation of railway funds. It is therefore, all the more incumbent upon the railway administration to demonstrate to the world that they are capable of controlling their officials and the funds that are destined to pass through their hands. If the Board of Posts and Communications can do this they will justify what caustic critics, in their mildest moments, characterise as "the British Legation's optimistic faith in Young China." They will at the same time, give the lie to the statement that "there was nothing, either in the necessities of the situation or in recent experience, to justify recognition of the provinces' claims to handle foreign capital without restriction or supervision." Likewise they will refute the statement that "British diplomacy in agreeing to these new terms, consented to arrangements which were morally certain to weaken the Central Government's credit abroad and its authority at home." The officials of China are distinctly on their trial.

Originally the loan above mentioned was to have been for £7,500,000, but ultimate discussion reduced it to £5,000,000 to be issued in two instalments. The first was, as has been mentioned, placed on the market in March 1908, at 98¾, the price to the Chinese Government being 93% of the face value (£100). On future instalments the Chinese Government was to receive the same rate as paid by the public less 5½ points commission to the financial syndicates.

The second instalment was floated in June, 1909, and was for £2,000,000 at 5 per cent., issued at par. Both issues were over-subscribed. This oversubscription at once gave evidence of the popularity of these investments. One feature was the considerable portion subscribed for by Chinese in Peking and Tientsin, three of the Metropolitan Boards securing £260,000 in bonds, exclusive of those purchased by private Chinese investors.

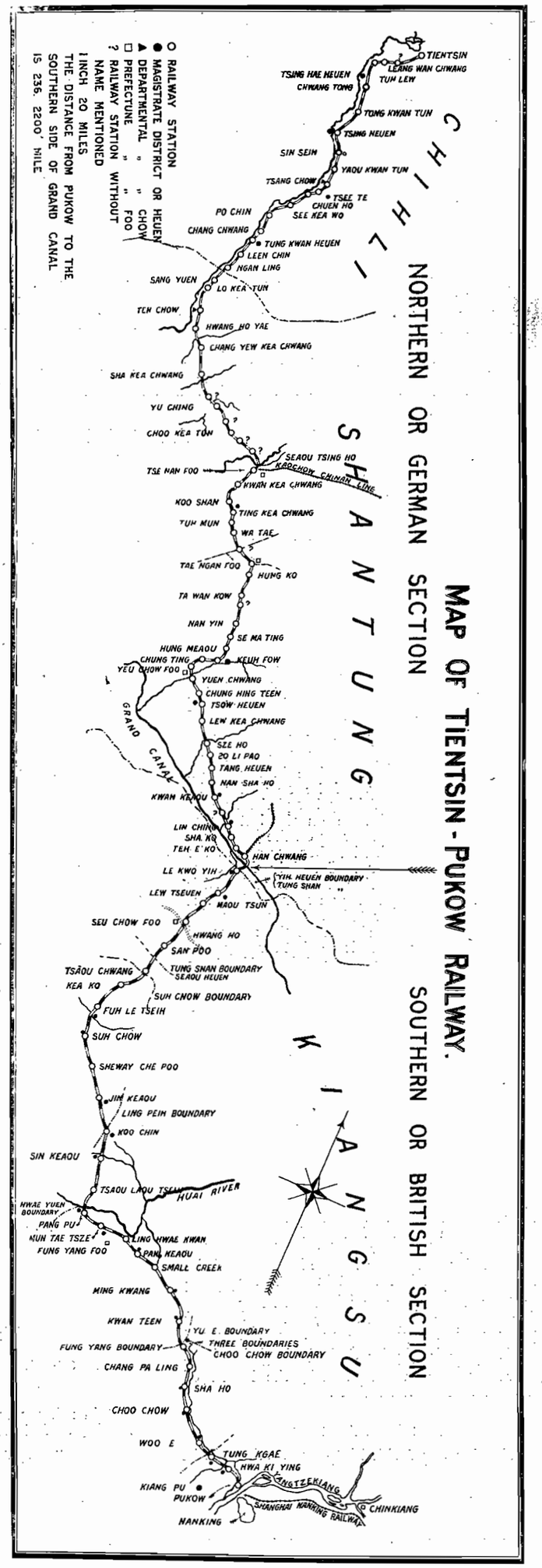
By 1910 the amounts so raised were exhausted, and it became necessary to raise a supplementary loan to complete the work. A new agreement was entered into for a loan of £4,800,000 at 5 per cent., and the instalment of £3,000,000 was offered to the public, £1,110,000 in London and £1,890,000 in Germany. This loan was submitted to the public at 100½ per cent. Despite its issue at a premium it was so heavily oversubscribed on the day of issue that the subscription lists were closed in London 50 minutes after opening. The quotation was then at ¾ premium, though it eased a little afterwards, and closed at ½ premium. The balance of the bonds (£1,800,000) is still outstanding, though private advances of £500,000 for the German section and £400,000 for the British, have been made.

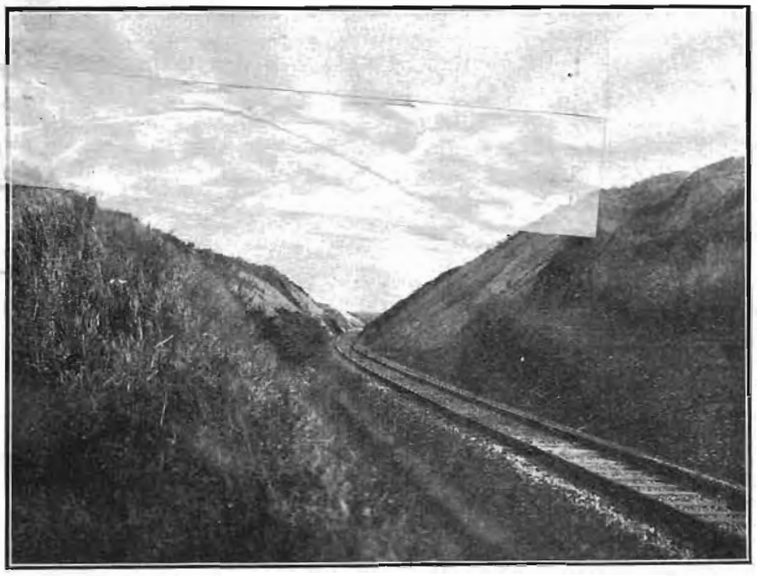
It is of interest to recall that in the final negotiations Liang Tun-yen represented the Chinese Government, and Mr. J. O. P. Bland the Chinese Central Railways Company, Ltd., (the substitute of the British and China Corporation which conducted the opening negotiations) and M. Cordes, the Deutsch-Asiatische. Bank. The Chinese Central Railways Company, Ltd., was formed in January, 1904, with a capital of £101,000.

Inauguration of Operations.

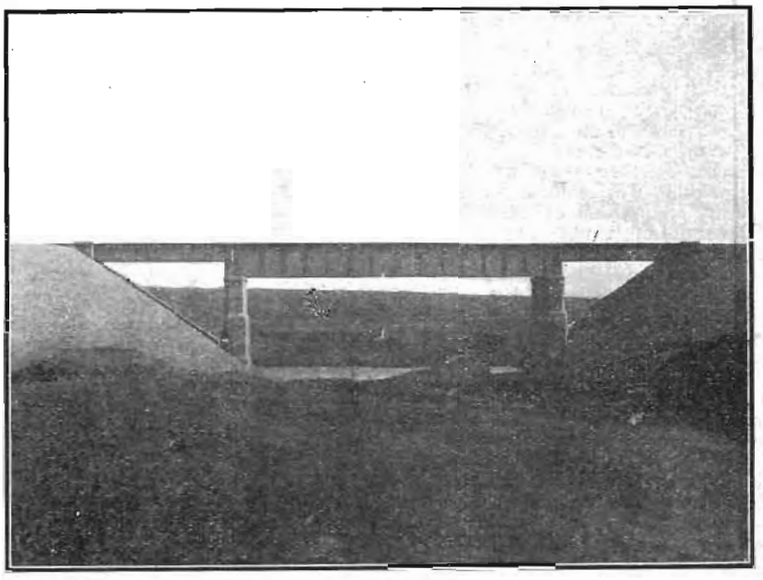
The successful flotation of the first loan did not mean a simultaneous commencement of construction work on both sections. The official inauguration of operations in the north took place on June 30, 1908, when the Chihli Viceroy with much ceremony, turned the first sod at Hsi-ku, a suburb of Tientsin. Work commenced in August. On the southern section the turning of the sod did not take place until October of the same year, and work was not begun until January, 1909, by which time the northern operations were in full swing. Lu Hai-huan was appointed the Director-General of the whole line, and under him were Li Te-Shun as Managing-Director of the Northern Section, and K. S. Low in a similar capacity in the south.

The early operations in the north were unhappily marred by a scandal which involved primarily the Managing-Director, Li Te-shun, and secondarily the Director-General and others. The Director-General is supposed to have suffered

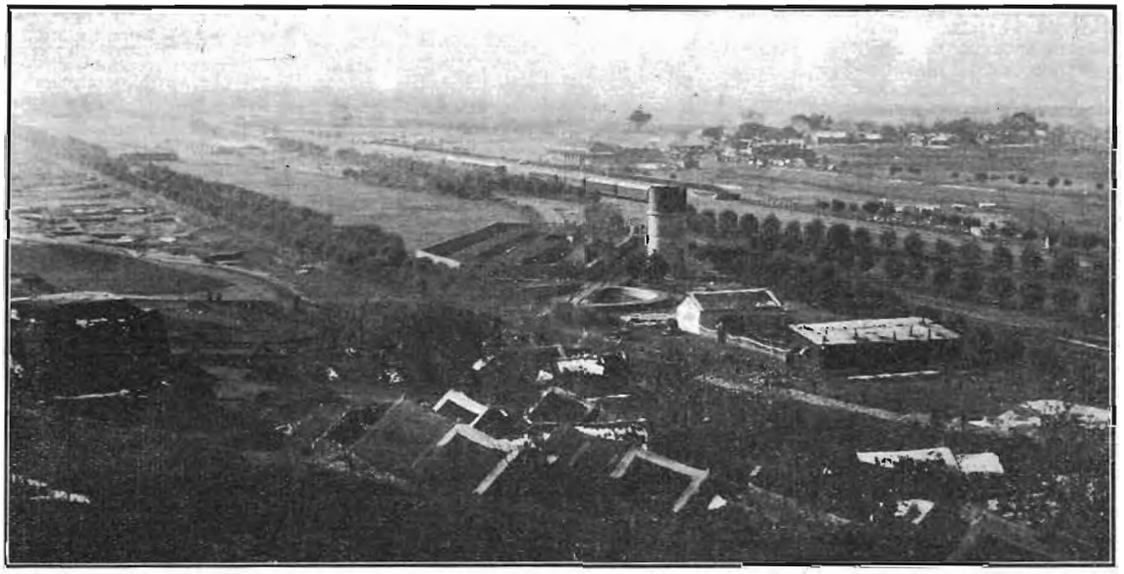




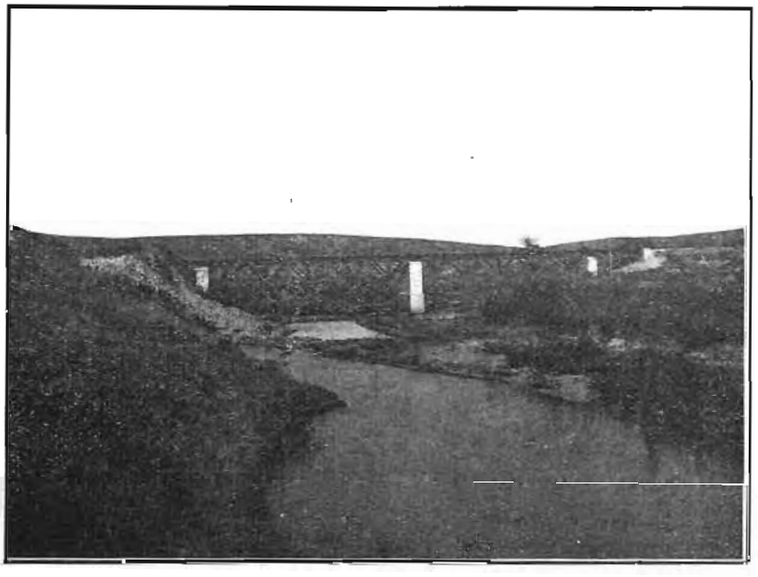
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. ROCK CUTTING AT SANCHIEH



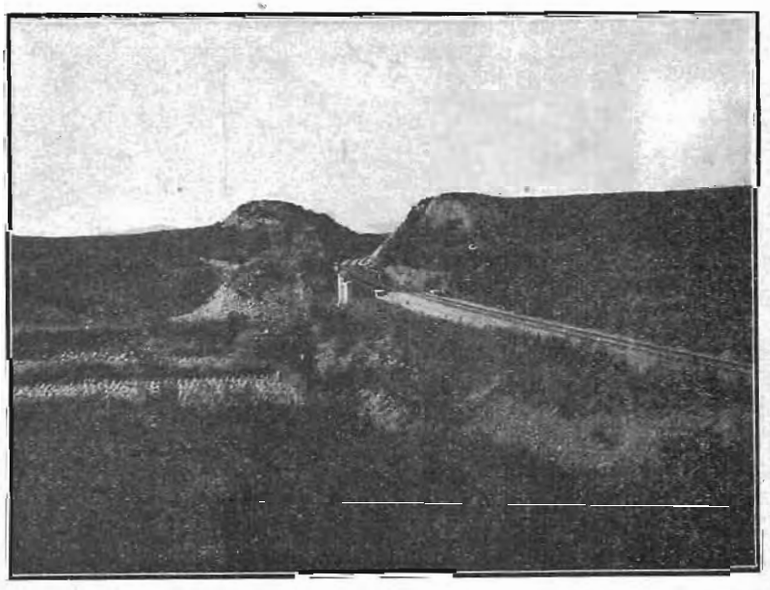
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. BRIDGE WITH STONE PIERS



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. HSUCHOWFU STATION



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. ONE OF THE BRIDGES



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. CUTTING AND CURVE

solely because he was in the post of responsibility and not because of any complicity in the alleged frauds. He was charged with malpractices and corruption, the latter comprising bribes in connection with land purchases at the site of the proposed Tientsin station, coal contracts, employment of coolies, etc., to the extent of Tls 3,500,000. Public feeling was excited by the exposure of Li by leading men who had suffered as a result of land speculation. Li appears to have undertaken that the Tientsin terminus of the railway should be at a certain point, and, in accordance with a promise to that effect, certain merchants launched into large land deals in the locality Li was involved either in speculation or peculation, or both, and Nemesis came upon him when the Viceroy of Chihli decided to place the terminus somewhere else other than in the place arranged by Li. The result was the loosing of a veritable Bedlam. Impeachments were lodged in Peking, and, as a result, an Imperial Edict was issued cashiering the Director-General, Lu Hai-huan, and the Managing-Director Li, the edict forbidding the latter to re-enter the Imperial service. Several others connected with the scandal were likewise deprived of rank, one being exiled and another being deported to his native town to be placed under surveillance.

Hsu Shih-chang, then President of the Railway Board, was authorised by the Regent to take up the duties of Director-General and he signalised his entrance to office by personally being responsible for all disbursements, an order from him prohibiting either of the Managing-Directors from paying out funds exceeding $500 without special sanction.

The trouble connected with the location of the station was settled by establishing it at the existing stopping place on the line to Peking, formerly called the "Tientsin City Station." A new station was also established on the right bank of the river and called "Tientsin West." The former "city" station was called "Tientsin Central," while the old station of the Peking-Mukden line in the Russian concession, formerly named "Tientsin Settlement" station, was renamed "Tientsin East." It is now the terminal of all trains from Pukow.

Another matter which at one time called for strong comment in British papers was a charge of irregularity with regard to the letting of tenders, and a series of questions was asked by Lord Winterton in the House of Commons to elicit information as to whether tenders were being called in the best interests of manufactures. Article 18 of the agreement which deals with the matter is reproduced here as a record, since the FAR EASTERN REVIEW has made particular efforts to obtain a fair field for suppliers in the awarding of tenders in China. The article says:

"For the Northern and Southern Sections of the Railway, respectively the Deutsch-Asiatische Bank and the Chinese Central Railways Limited will act as agents of the Railway Administration during construction for the purchase of all materials, plant and goods required to be imported from abroad. For all important purchases of such materials tenders shall be called for by the Managing-Director; in the case of all tenders, indents and orders for the importation of goods, and materials from abroad the said agents shall purchase the materials required on the railway and shall charge the original net cost of the same plus a commission of five (5) per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorisation by the Managing-Director.

"In return for payment of commission as above stated, the Deutsch-Asiatische Bank and the Chinese Central Railways Limited as agents, within their respective sections, shall be prepared to superintend the purchase of all foreign materials required for the construction and equipment of the railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality, and that the railway administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the Northern and Southern sections respectively. The railway administration reserves the right, while paying the above stipulated commission to the said agents in respect of the purchases of foreign materials, to avail itself of the services of other agents in China or abroad should it see fit to do so.

"Original invoices and inspectors' certificates are to be submitted to the Managing-Director; and all purchases made by the agents on behalf of the Railway shall be supported by manufacturers' original invoices and inspectors' certificates.

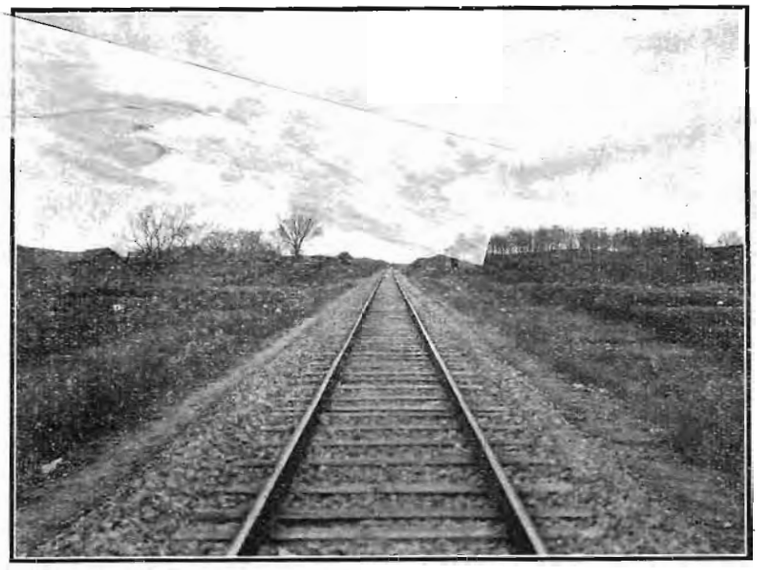
"No commission shall be paid to the agents except as above provided; but it is understood that the railway administration shall provide out of railway funds for the remuneration of consulting engineers whenever their services are engaged.

"With a view to encouragement of Chinese industries, preference will be given at equal

CHOU TZE-CHI

TUTU OF SHANTUNG WHO DROVE THE LAST SPIKE OF THE YELLOW RIVER BRIDGE

TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. MR. T. W. T. TUCKEY, M. INST. C. E., ENGINEER-IN-CHIEF, AND OFFICE STAFF



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
A PLATE-LAYER'S HOUSE

prices and qualities, over British, German or other foreign goods to Chinese materials and goods manufactured in China. No commission will be paid on purchase of such materials and goods.

"It is understood and agreed that after the construction of the line is completed the Deutsch-Asiatische Bank and the Chinese Central Railway Limited, within their respective sections, will be given the preference for such business, during the currency of the Loan, for the supply of foreign materials as the railway administration may require, on terms to be hereafter mutually agreed upon."

Route of the Line

The route of the line runs to a greater or less extent parallel with the Peking-Hankow Railway which connects the capital with the Yangtsze some 200 miles to the west. For its entire length the line also practically parallels that famous monument to Chinese ancient enterprise, the Grand Canal, and in Shantung the traveller may at many spots see the tops of junk sails on the waterway above the distant trees. The crossing of the canal is practically the junction of the northern and southern sections. Between Tientsin and the Yellow River the country is a vast level plain of alluvium mingled with loess, and without grades. It is intensely cultivated, but the soil grows less productive as the Yellow River region is reached.

After crossing the river (over the splendid bridge illustrated and described in detail in the October number of the Far Eastern Review) and passing Tsinan-fu the capital of Shantung, hilly country is reached, the formation being a mingling of gneiss, granite, sandstone, and limestone, and a few hours out the historic Sacred Mountain, Tai-shan, is passed, the line skirting its base. The rugged peak rises 5,060 feet directly from the plain, and is the most noted of the five sacred mountains of China. It was a famous pilgrim resort twenty centuries before the Christian era. As tradition records, the ancient monarch Shun (one of the first Emperors of China, who reigned B.C. 2255 to 2205) is said to have sacrificed there. At the present day each sect has erected temples and monasteries on its peaks, and thousands of pilgrims throng to them in spring time. Likewise Europeans have taken advantage of its salubrious heights and in the summer months escape the heat by residing in the various houses built in the groves.

Skirting hills and crossing wide cultivated plains the sub-prefecture or district city of Kufeu-hsien is passed. This is the birth place of Confucius. The great sage was born there 551 B.C. and died in 479, his tomb, also the resort of great numbers of pilgrims, being reached by leaving the train at Chufu, a few miles to the north of Yenchow-fu.

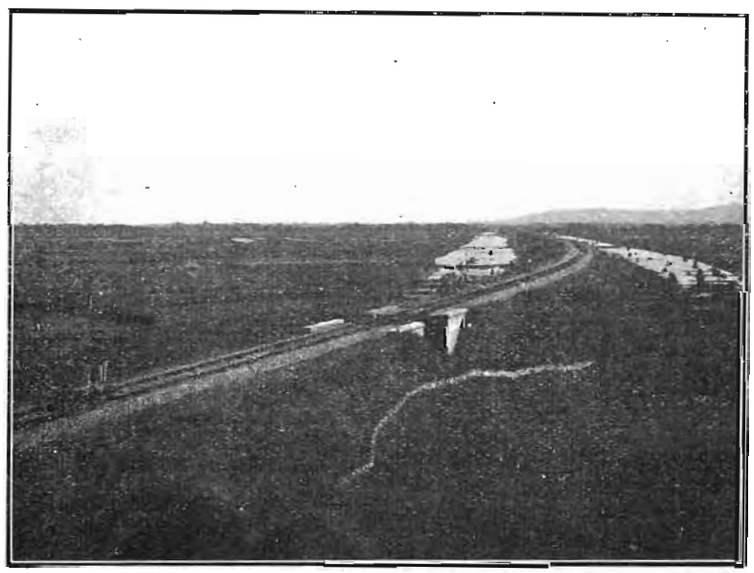
Great plains are traversed almost to the Yangtsze, but as the southern section of the line passes out of Shantung the soil becomes poorer, though grain in large quantities is grown, and further south towards Pukow sesame seed is produced in large quantities, and the region is likely to prove a rich bean producing one when that crop is properly introduced.

Towards the south of Shantung the line for some distance skirts the Weishan lake, a large sheet of shallow water, connected with the Grand Canal, which is soon afterwards crossed. Rocky country is here entered, the elevation being some 300 feet above the level of Nanking, and the line dips to the great plain which practically continues for the next 135 miles to Pukow, passing through the flood and famine region of the Hwai River valley and the Shai Ho valley. Shortly after crossing the Grand Canal, Hsuchowfu is reached, and this point is of interest as it is in the old bed of the Yellow River. The old embankments still stand.

The southern section furnished grave problems for the engineer in embankment work and the prevention of damage from flood, which were solved with credit, the provisions against floods or the breaking of river dykes, notably the Hwai River banks, being excellent.

Taking it all through, the country developed by the line is rich agriculturally, grain being raised on the lowlands and fruit on the highlands. Coal and iron deposits exist in certain localities and there are indications of the presence of lead and other metals. Building stone for building and other commercial purposes is also plentiful, and especially in portions of Shantung not far from Tsinan-fu there is a large industry in the production of mill-stones for the crushing of grain. These have been exported for hundreds of years to different parts of the country, by various means, some finding their way to the southern provinces by the Grand Canal. Brick-making also shows promise of development.

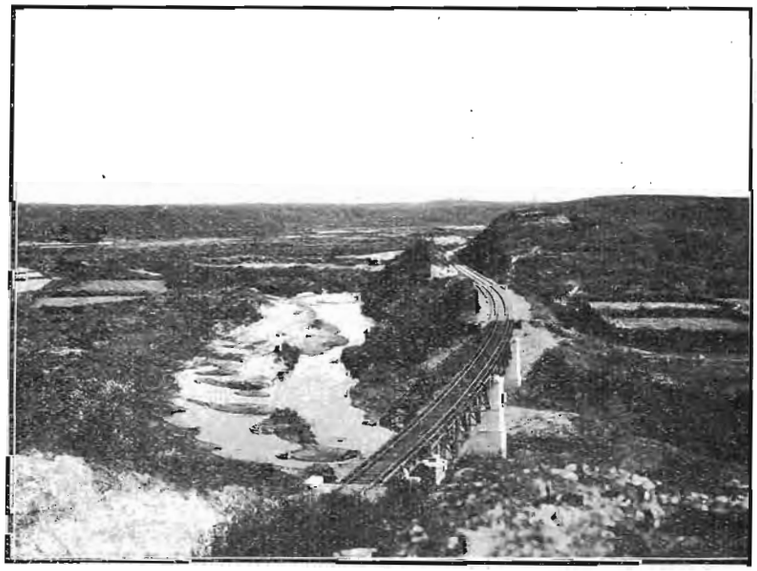
The fact that the line runs between the two large rivers, the Yangtsze and the Yellow, gives it great prospects and the possibilities to the westward are sufficient to give it considerable importance. Its prospects as an earner are exhibited by the figures for November last, which showed a return of $524,678, which may be taken as a fair average. The total for the year would be $6,296,136, which is remarkable when it is remembered that only two through trains run each way at present each week, while the ordinary daily service is hardly more than of a construction train nature, no effort being made yet to attract passengers or freight.



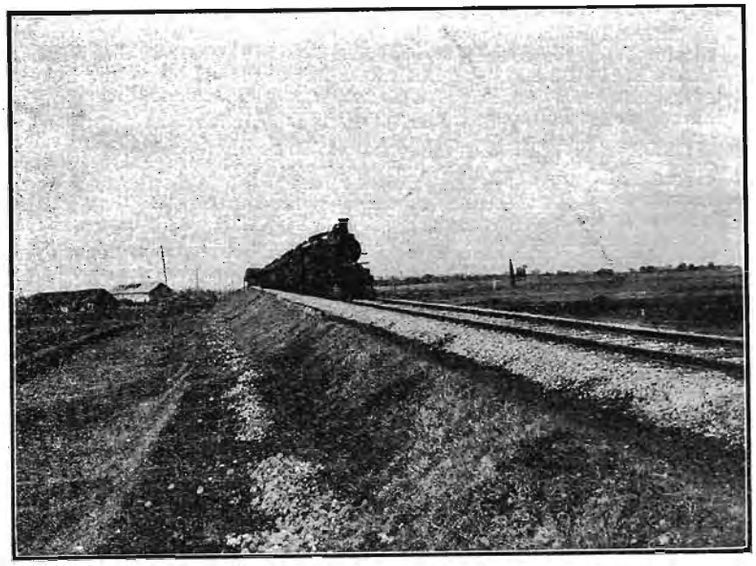
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
TUNG KE SWAMP, THE WORST TROUBLE ON THE LINE

Methods of Construction

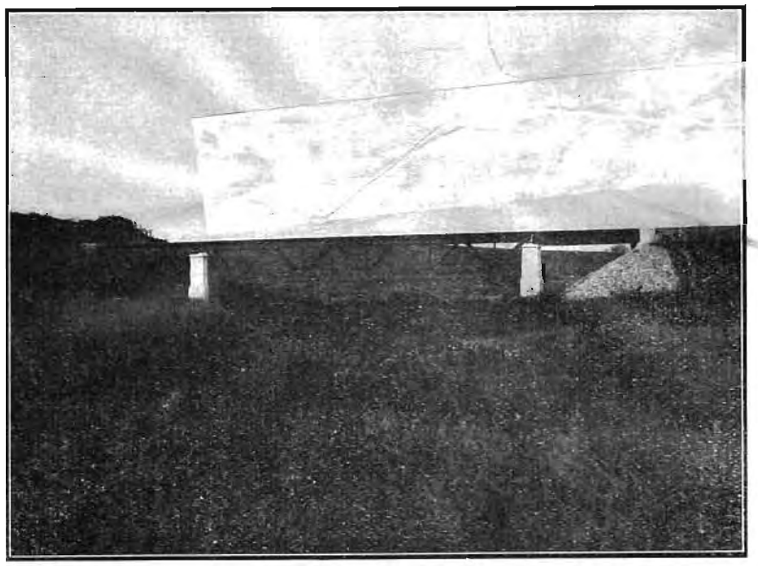
As is the case with all railways in China coolie labor was used throughout the construction, with very few mechanical aids. The low prices obtainable make it very difficult for machinery to compete, especially in view of the high cost of coal. The contract system, dealing with native contractors, has also been found to give satisfaction in the manner of performance of the work. The bulk of the labor is employed locally from the farming class, but, on this



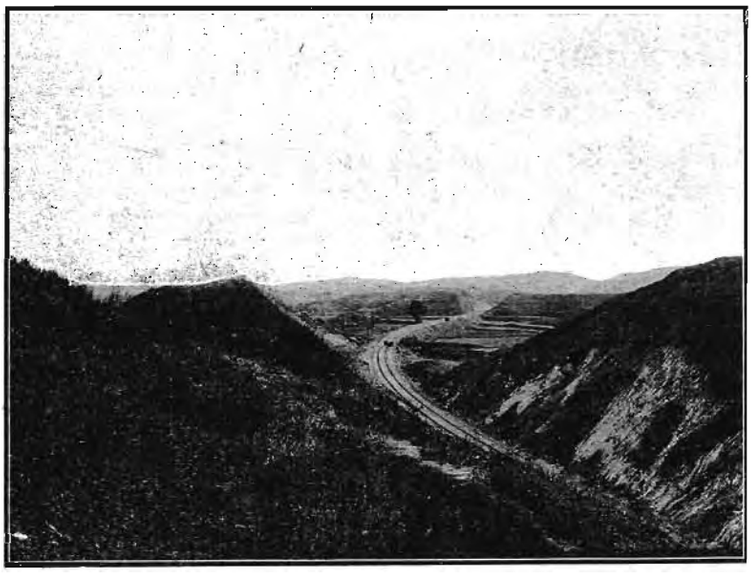
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
VIEW AT MILE 51



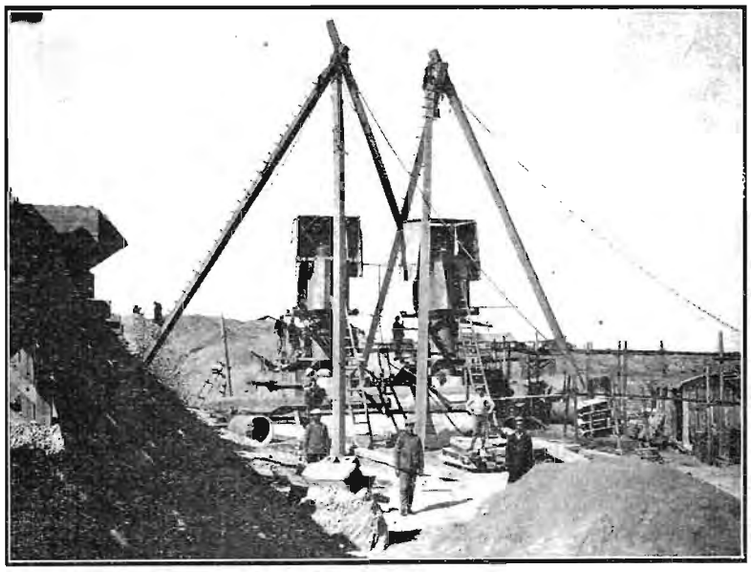
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
TRAIN AT PENG-PU



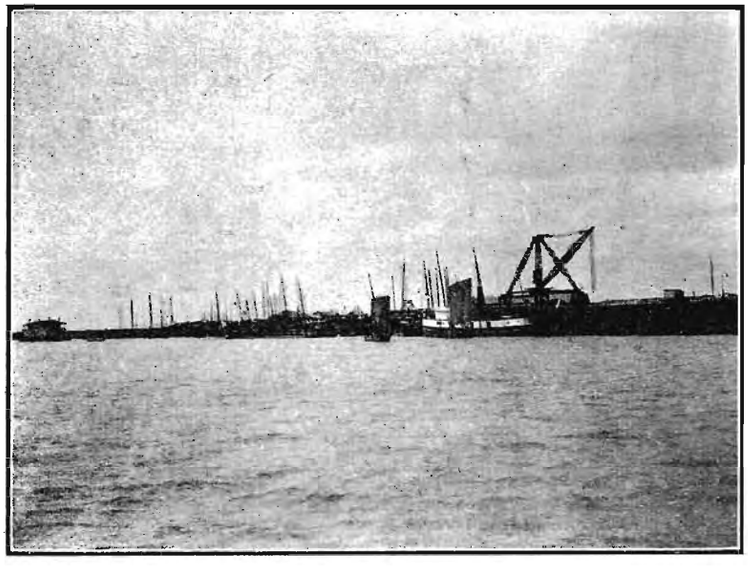
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
BRIDGE WITH CONCRETE PIERS



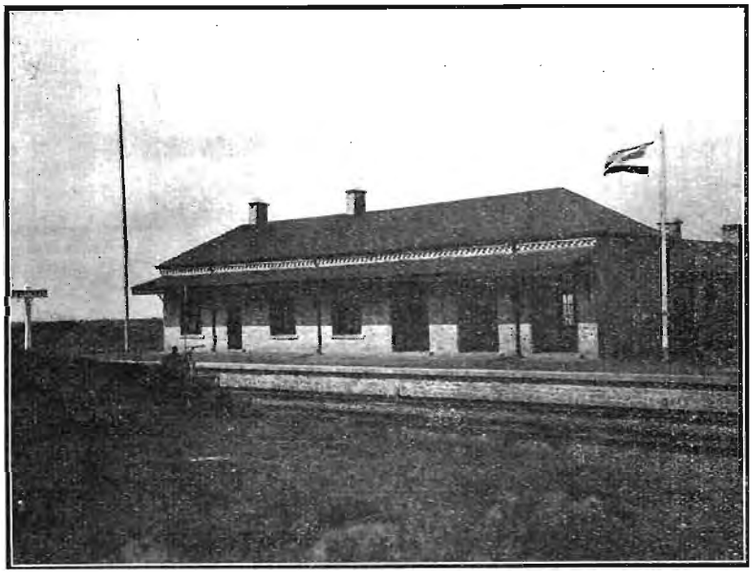
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
VIEW NEAR PUKOW



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
SINKING A BRIDGE PIER BY COMPRESSED AIR



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
TERMINUS ON THE YANGTSZE



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION.
A THIRD CLASS STATION

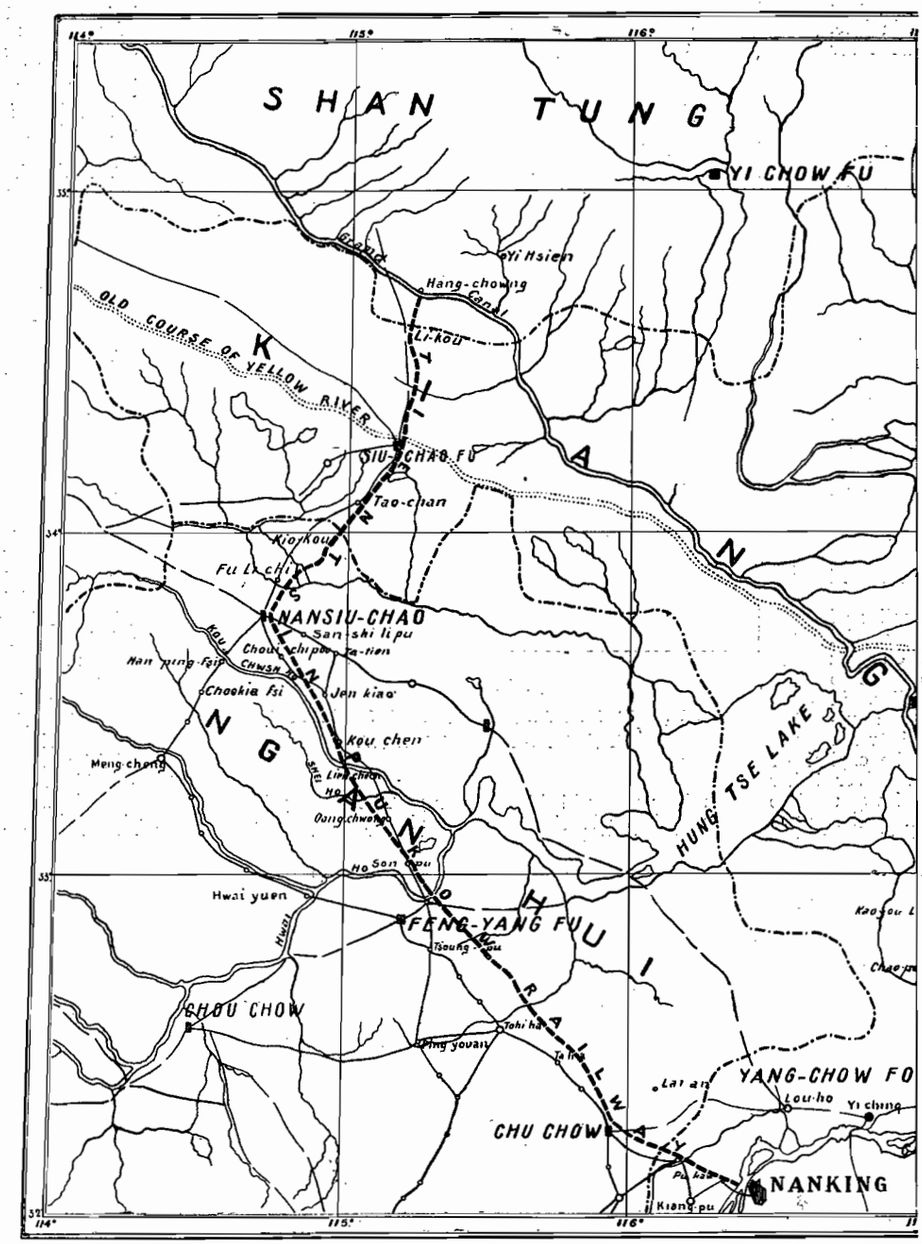
line a number of experienced workmen who had assisted in building the earlier roads in the north, were available as construction foremen.

Grading and concrete work were conducted with the ordinary coolie methods of manual handling and mixing, and transporting in baskets. Carpenter work on forms was done by Chinese carpenters, the timber being mostly imported from Oregon and delivered at the working site in large sticks, such as 12 × 12 inch pieces, and then sawed up into boards by hand. This was for convenience in shipping and added security against theft of lumber. Scaffolding, bracing, and false-work were in many cases made of cross-ties piled crib-fashion. Quarrying of rock for concrete was done by hand in quarries opened along the right-of-way in sections where stone was plentiful. All of the drilling was by hand and the rock was broken up by hammers after blasting. Where stone was scarce it was purchased from Chinese quarrying contractors and delivered by water at some point near the line.

One incident illustrative of what can be done by the Chinese when left to their own devices is worthy of mention. During a phenomenal flood at the River the bridge in course of construction carried away and one section of the steel work, weighing something like 300 tons, was displaced and sank in the stream. The Chinese undertook to raise the sunken section and after a time accomplished the task, ultimately landing it intact on the river bank, whence it was subsequently placed in position. The foreign engineers, knowing the capacity of the Chinese in heavy weight lifting, interfered in no way with the effort, and contented themselves by merely supervising the operation.

On the Northern section thousands of coolies were employed at the numerous brick kilns erected at the different points to employ ballast for the line, and they displayed exceptional ability in using modern methods in this direction. On the Yellow River bridge, too, as on all other bridges, they were the sole laborers employed on the erection of steel work, exhibiting great adaptability in this direction and performing the work of skilled artisans to the thorough satisfaction of the engineers. In many respects the coolie labor falls far short of that available in European countries, the coolie being much slower at his task, but the numbers available at so cheap a price give compensation.

Transportation of materials to the site of construction was one of the large problems of the work. On the British section the heavy earthwork near Pukow delayed the opening of rail communication to the line beyond and made necessary the shipment of much of the material by circuitous waterway routes to a point about 20 miles north, and from there it was distributed over the first 100 miles by way of small streams and by pack labor, wheelbarrows and carts, and also by construction trains. Heavy steelwork on the bridges usually waited until the track reached the site. On the German section, supplies for the mountainous, heavy portion, just north of the Grand Canal, were delivered at Yenchowfu over the grade from Tientsin and were then transhipped by way of the Grand Canal to Hanchwang. This canal is only 4 feet deep and its navigation is difficult and uncertain. The native wheelbarrows, for local transportation of a few miles, have quite a large capacity, as they are built with two balanced baskets one on each side of a large wheel, the weight being entirely on the wheel.



TIENTSIN-PUKOW RAILWAY. MAP OF SOUTHERN SECTION

Permanent Way and Stations

The permanent track construction is of 85-lb. rail laid on ties which are of creosoted Oregon pine over a part of the line and also of Japanese hardwood. The rail and most of the fastenings used on the British section are the product of the native iron works at Hanyang, near Hankow. On the German section they are largely of German manufacture. The track is laid in rock ballast over the greater part of the line, but in one part of the German section the ballast is of broken brick, made from local clay in kilns specially constructed for this work. The Chinese make brick in this locality, but the native brick is not burned hard enough to be serviceable.

The striking difference between the architectural character of the railway stations on the northern and southern sections of this railway is likely to attract the attention of all observant travellers. Those built under the direction and to the design of the German engineers are lavish in their ornamentation and florid in their design, whilst those erected by the British are plain to a degree. The two extremes are exhibited. The German stations are in many respects certainly handsome to behold, and the design is carried down to the out-buildings, the water towers, and even the pointsmen's huts. The roofs are of red tiles, and the design differs with almost every station, but in the main Chinese ideas have been utilised to leaven European notions, and the result is harmonious in most cases. The graceful curved gables of China have been adopted in most of the first class stations and give an effective finish. But all are infinitely too expensively built for the purpose they are destined to serve. On the other hand the British stations are plain brick buildings with galvanised iron roofs, and are entirely devoid of architectural embellishment. All of them, large and small, have been carried out to one standard design, and from the utilitarian point of view answer their purpose perhaps better than the buildings on the northern section. They conform more with their surroundings; are economical and serviceable. The gorgeous structures on the German section seem to be beyond the need at this stage of existence in China, and are incongrous when it is remembered that they are built not to conform with architecturally beautiful surroundings, but merely as the place of embarkation or disembarkation of Chinese passangers, most of whom live and have their being in mud huts or at most in houses of an inferior kind. They are, it is fair to say, too costly a luxury at a time when the standard of living is so low in the interior of China and when China could well utilise the major portion of the money they cost in other directions. The money could have been profitably employed had it been put into the permanent way or rolling stock or had it been saved to provide for the service and comfort of passengers on the trains. By that will the line be judged in the future.

Junctions and Branches

The junction points with other lines are at Tientsin Central, with the Peking-Mukden

Railway: at Tsinan-fu, with the Shantung-Tsingtao railway; at Pukow (by ferry), with the Shanghai-Nanking Railway; at Techow, with the projected railway to Chengting-fu; at Hsuchao-fu, with the projected Kaifeng-fu Railway extension; at Fenyang, with the projected Fenyang-Sinyang-chow railway, though this later is likely to be varied when the time comes for construction. The junction points with the branch lines are at Yenchow-fu, a short line of some 20 miles running to Tsining-fu, on the Grand Canal; and a Lincheng, (21 miles) running to Yihsien, passing the coal mines at Tsochuang. Another branch, which was the original starting section of the line, connects Liang Wang-cheng, on the main line, with Chen Tang-chuang on the river some 15 miles away.

NORTHERN SECTION

The northern section of the line, now running between Tientsin Central station (where it joins the Peking-Mukden line) to Hanchuang, on the southern boundary of Shantung province, is the product of German money and skill. It is 389.72 miles in length. Though the first sod was officially turned on June 30, 1908, actual work was delayed until August of the same year. It was then planned to carry out a section of 160 miles between Tientsin and Tehchow, and a commencement was made at Cheng Tang-chuang at a point on the Hai River some six miles below Tientsin, where a wharf was erected. The question of the site of the Tientsin station had been left undecided and was not finally settled until 1911, the scandal in connection therewith being mentioned above.

By January 10, 1910, about 70 miles of line were ready for traffic, and a trial trip to Tsang-chow was run on that date, a further, section being opened to Tehchow, an additional 90 miles, in April; whilst by October 28 a semi-weekly service was begun between Tientsin West and Tsinan-fu, the capital of Shantung province, the Yellow River being crossed by ferry. A steam launch was used to convey passengers from Tientsin Settlement to the railway station at Cheng Tang-chuang until the line was eventually opened to Tientsin Central. Progress was made to the south of the Yellow River in corresponding manner and within another year the whole line was carrying traffic, except for the crossing of the Yellow River, which was effected in October and put into service in December.

From Tientsin to the Yellow River there were no other engineering difficulties than the

Q. F. CHEN

TRAFFIC MANAGER, NORTHERN SECTION, TIENTSIN-PUKOW RAILWAY

minor ones of bridge building. The country is practically level, and being almost an entire plain of alluvium and loess there is no hill to be seen and no stone to be found. The latter had the great disadvantage of compelling the engineers to seek other means of obtaining ballast and it was eventually decided to build brick kilns on modern lines. A brick [illegible] erected for each section, and [illegible] used for various [illegible] and for ballast, thousands [illegible] the [illegible] calculated to [illegible] of ordinary stone. [illegible] is deposited over a simple layer of brick bats to a minimum depth of 30 centimetres.

Approaching the Yellow River the embankment work increased and special care was necessary in construction to provide against exceptional floods. A waterway is provided about every third of a mile, and in addition to being of exceptional strength the sides are planted with shrubs and trees to retard the action of flood waters.

The line is, of course, of standard gauge (4ft. 8½ inches), and is single tracked throughout.

The limiting gradient is 1 in 150, with none between Tientsin and the Yellow River. After passing Tsinan-fu, however, hilly country is entered and there are several maximum grades.

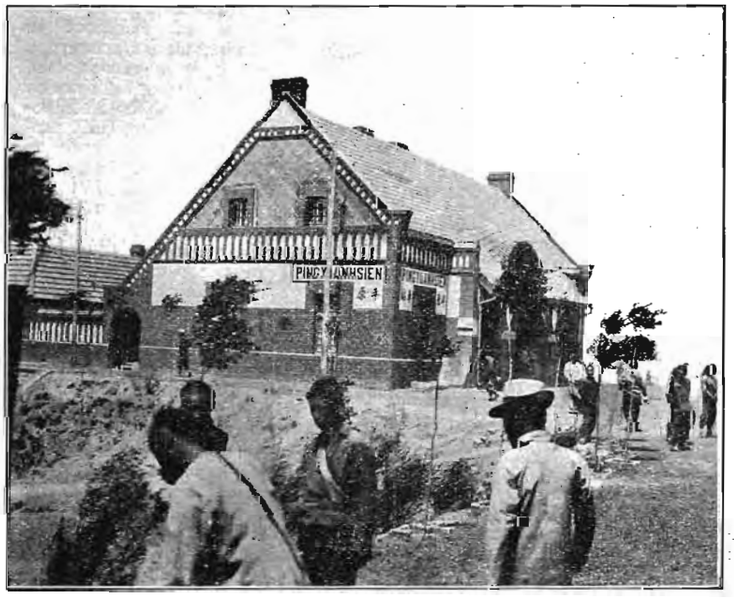
The limiting radius of the curves is 500 feet, though such sharp curves occur only in a few instances. Most of the curves vary from 1,000 feet to 3.000 feet.

The width of the permanent way is 5.10 metres at the height of the upper face of the ties. The ties are of oak or other hardwood obtained mostly from Japan. The length of the ties is about 9 feet and they are laid at a distance of about 2 feet 5 inches apart at the joints.

The rails are 85 lb. and 4,820 tons were procured from the Hanyang Iron works, near Hankow.

On the section there are 257 steel spans with a gross length of 5,970 metres and a total weight in steel of 11,268 tons. The openings of the arch spans are reinforced concrete bridges, totalling 7,060 metres. The most notable bridges are:

Yellow River Bridge	1,244.4	metres.
Pei-ho bridge	160	„
Tsau Huang-ho bridge	235	„
Chi Hai-ho bridge	180	„
Sha-ho, No. 1 bridge	280	„
Sha-ho, No. 2 bridge	200	„
Pan-ho bridge	230	„
Ta Wen-ho bridge	360	„
Hsiao Wen-ho bridge	170	„
Chieh-ho bridge	270	„
Pai Sha-ho bridge	240	„



TIENTSIN-PUKOW RAILWAY—TYPICAL STATIONS ON THE NORTHERN (GERMAN) SECTION

The Yellow River Bridge, is of course, the greatest engineering feat on the whole line, and, as it was fully described in the FAR EASTERN REVIEW of October last, it is unnecessary to say more here than that it consists of nine 91.5 metre truss spans and three cantilever spans over the main channel, made up of two anchor arm spans of 128.1 metres and a central span of 164.7 metres. The total weight of steel in the bridge is 11,000 tons, of which 8,700 are contained in the superstructure. In the sinking of the masonry piers it was found impossible to rest them on solid rock so that reinforced concrete piles had to be driven, pneumatic caissons being used in and near the stream. As a protection against the current, fender-piles were driven around each pier and rock deposited between the piles.

The station buildings of this section are, as mentioned above, artistic. They are built either of brick or stone, with roofs of red tiles manufactured in the brick-yards of the railway. The buildings are generally situated on the level of the station platforms, which latter are the height of the car steps. Excellent loading platforms of earth supported by steel rails or concrete are provided at each station, the height being one foot below the floors of cars.

The main repair shops are at Tsinan-fu where there is a complete plant for repair and construction.

The rolling stock of the northern half is more elaborate than that on the south, and the accommodation on the passenger cars is better. The following is the list of stock:—

Number and type of locomotives:—10 3-3 coupled locos for shunting; 20 3-4 goods train locomotives; 20 3-5 passenger train locomotives. Total 50.

Number and type of passenger cars:—4 drawing room cars; 4 1st class coupé cars; 9 1/11 class composite cars; 16 2nd class cars. Total 125.

Number and type of service cars:—1 saloon car; 1 inspector car; 8 baggage vans; 3 heater vans; 4 breakdown vans; 6 crane cars; 1 standard weight car; 6 kitchen cars. Total 30.

Number and type of freight cars:—60 ballast cars 15-tons; 12 ballast cars 20-tons; 100 ballast cars 30-tons; 110 high side freight cars. (20-tons); 10 high side freight cars (24-tons); 190 high side freight cars (30-tons); 47 covered freight cars (15-tons); 47 covered freight cars (24-tons); 50 covered freight cars (30-tons); 10 timber cars (30-tons); 10 oil tank cars. Total 646. Grand total 801 cars.

Among the stock is a magnificent car for the Directors which cost 57,000 marks.

It was estimated that $1,050,000 would be expended during the three months of October, November and December of 1912 for construction and maintenance purposes on the Northern section. That would not of course complete the line. The estimated expenditure for September was $355,967.

Figures showing the cost of construction of the northern section are not yet available, but it is estimated that it will be something like £3,000 per mile more than the southern section, which is calculated to be £10,692 per mile.

C. T. SHAR

TRAFFIC MANAGER, TIENTSIN-PUKOW RAILWAY, SOUTHERN SECTION

COST OF CONSTRUCTION

The net cost of the Northern Section to November 30 was Kuping Taels 41,878,633, which is the equivalent of Taels 92,000 per mile inclusive of the Yellow River Bridge. The cost per mile exclusive of the Bridge is Taels 82,000. The total cost of the Bridge was Taels 4,564,357 and other bridges and passages cost Taels 7,539,884. Other items of expenditure were:—

	Taels
Earthwork	1,695,247
Superstructure on main line and stations	9,267,846
Stations and Buildings	2,149,471
Land Purchases	1,812,065
Rolling Stock	3,936,180
General Charges	3,368,490

SOUTHERN SECTION

Although the agreement for the construction of the line was concluded in January, 1908, it was not until September of the same year that a beginning was seriously made to set out the southern section of the line, the delay being primarily occasioned in making the necessary Chinese official appointments.

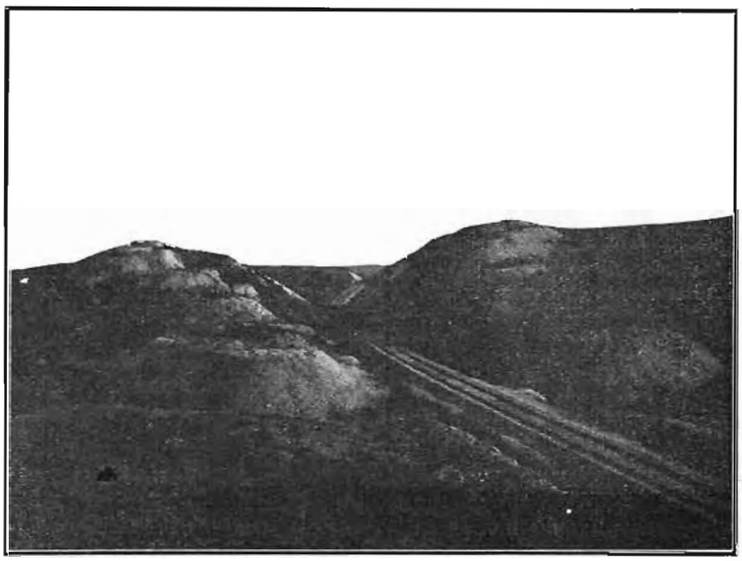
The preliminary survey which had been made for the Loan Syndicate was quickly shown to be capable of improvement and a much better route with easier gradients and curves of larger radius was ultimately found. Keeping in mind the necessity of obtaining a first class line suitable for large traffic the Engineer-in-Chief fixed the maximum grade at 1 in 150, and the radius of the sharpest curve at 2,000 feet, as against a ruling grade in the original setting out of the line of 1 in 100, and curves which were in some cases as small in radius as 1,000 feet—factors which would seriously have limited the weight and speed of trains.

Not only was a better route obtained but the line was materially shortened, though the result was not accomplished without considerable difficulty. In the 93 miles between Pukow and the Hwai river, in fact, 39 miles are of the maximum gradient, a proportion extremely high compared with most railways yet built in China. Beyond mile 93 the country is open and no particular difficulties marked the survey, though the position of the bridge across the Hwai River was a point of interest which had to be decided. The presence of quicksand and the knowledge that the bulk of the water in flood time left its course above where the crossing would have fallen on the direct route, at mile 92, east of the town of Lin-hwai-kwan, necessitated the selection of another crossing and the line was lengthened to obtain the advantage of rock foundations about mile 110, near the town of Pengpu, which has, by virtue of being close to the line and river, since developed an important trade.

It was at first arranged to commence the earthworks in some of the most difficult places in October, 1908, but as it was desired by the Peking authorities that the Director-General of Railways should cut the first sod in person, the work was delayed until January, 1909. Thenceforward construction went on until interrupted by the flood of that year and the revolution of 1911-12.

Owing to its position the railway suffered considerably. In November, 1911, when the first outbreak occurred on the Hwai River, several of the stations were looted, and much rolling stock was damaged. Later, when the Imperial forces retreated from Pukow they took with them a great deal of the rolling stock, holding it first at Hsuchow-fu, and later

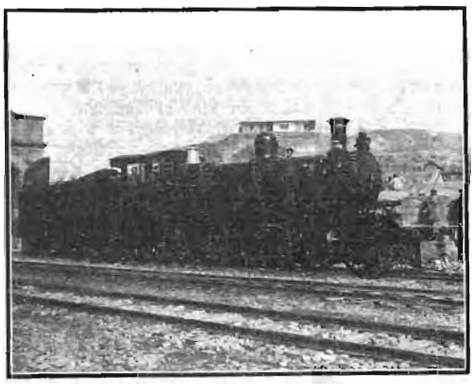
TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. AN EXAMPLE OF BRIDGE-WORK



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. ROCK CUTTING

at Yenchow-fu, in Shantung, where the cars were used as barracks for the troops until the latter half of 1912. Even ballast cars were withdrawn from service, and as there was also a curtailment of funds little progress was made during the nine months of trouble. For several months there was constant fighting and portions of the line lying between the contending parties had to be abandoned by the railway authorities. At Pukow one of the pontoons was sunk by shell fire and another was struck above the water line.

In addition to all this the construction period unfortunately coincided with a series of wet years. Three years in succession there were constant rains, and the terrible floods in the Hwai valley were followed by famine and pestilence, the fever introduced by the refugees being contracted by the workmen, hundreds of whom were at one time incapacitated from work. Despite these drawbacks, however, the 236½ miles of line were opened to through traffic to Tientsin in December, 1912, though a service to Tsinan-fu had been opened early in the year, the delay in establishing through connection with the north being due solely to

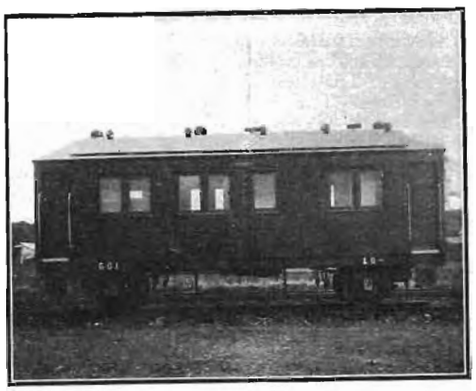


TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. PASSENGER LOCOMOTIVE

the construction of the Yellow River Bridge not having been completed until December of last year.

Progress of the Work

Difficulties of an aggravating kind had to be confronted at Pukow, the terminal on the Yangtsze river, opposite Nanking, at the outset, for the land thereabouts is so low that a veritable island had to be built upon which to erect the necessary stores and land material.



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. INSPECTION CAR BUILT ENTIRELY AT PUKOW SHOPS

The flat is in fact part of the Yangtsze river, for it is covered with water for about six months in the year; and the nearest high ground is about two and a half miles distant.

It was not until October, 1909 that a dry landing had been prepared, but in the meantime a temporary route, partly under water, was put through, and some materials and machinery were transported to the workshop site within the old city of Pukow, on the nearest high land. But having got out of the swamps there was not then a clear route into the country to enable material to be transported with facility, for the route lay through a hill which necessitated a cutting 1,000 feet long and eighty feet deep, most of it being rock. Rails could not be laid through this cutting until May, 1910, and before that time no transport of material by rail could be attempted.

A small canal served as a means to transport a little material, but the very heavy work in the first fourteen miles, consisting of the river bed, a series of big cuttings, and an embankment of about twenty feet high and five miles long, across a soft swamp, where the filling was extremely difficult, seriously hampered the construction work and kept back the transport of materials by at least a year, as compared with average country.

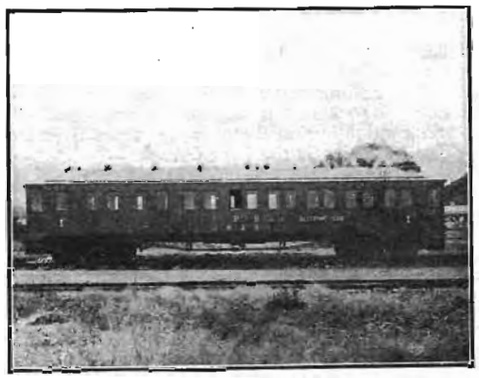
From mile 14 to mile 47, the country is broken, but except for numerous small bridges, and two large bridges over sandy rivers, where the foundations were very difficult, the work was not exceptionally heavy. The ballast for the southern portion of the line was obtained near mile 30, where a branch line is laid to the quarry.

Between mile 47 and mile 73 deep rock cuttings succeed one another with bridges of considerable height between. The work was exceptionally heavy, the amount of rock excavated being approximately 200,000 *fang*. As the rock was unsuited for building purposes every bridge site had to be crossed by a temporary timber viaduct, some of which were of considerable size.

The Hwai River was reached by August, 1910, when transport of material by rail was possible, the river being used to take material as far as Kuchen, at mile 135.

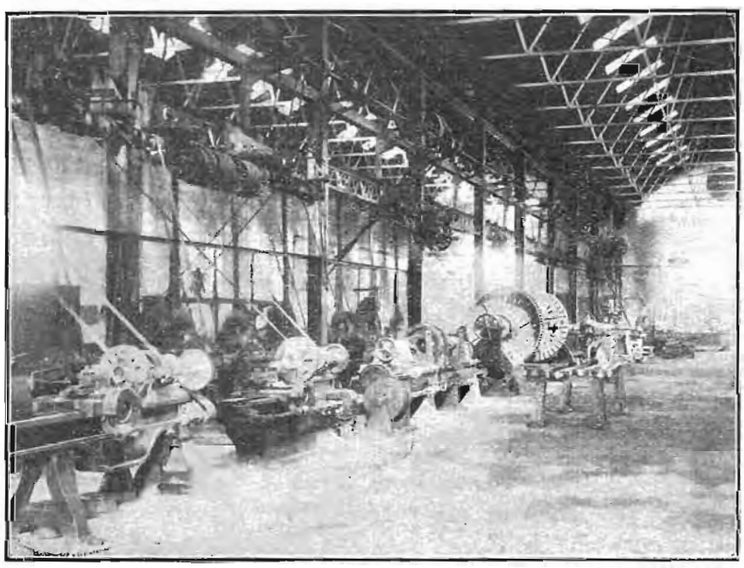
Crossing the Hwai River, the railway passes through the districts noted for the terrible floods and famine in 1910-11-12. Portion of the country between mile 110 and mile 175 were under water for months, large areas being covered by water to a depth of 10 feet or more. It was fortunate that the railway was sufficiently advanced to be of service in the transportation of relief for the starving people, and during the spring of 1912 the trains were largely devoted to carrying famine relief.

From mile 170 (where there is a branch line leading to a lime stone quarry, from which

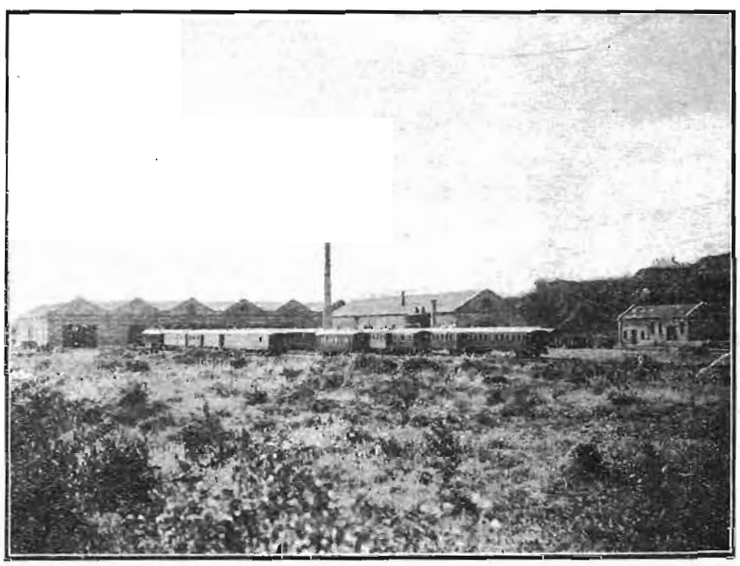


TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. SLEEPING CAR CONVERTED AT PUKOW FROM COMPOSITE CAR DAMAGED DURING THE REVOLUTION

about 100 miles of railway have been ballasted) to Hsuchow-fu, there was no particular difficulty. It is interesting to note that the station at Hsuchow-fu is situated in the old bed of the Yellow River, which is much higher than the surrounding country. After passing Hsuchow-fu, a flat plain is crossed for a distance of about eight miles, and then a



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. PUKOW WORKSHOPS INTERIOR VIEW



TIENTSIN-PUKOW RAILWAY—SOUTHERN SECTION. PUKOW WORKSHOPS

peculiarly rocky country is entered which necessitated three and a quarter miles of rock cuttings.

The bridge over the Hwai River (about 511 miles from Tientsin and 110 from Pukow) was completed on May 15, 1911. It consists of nine through riveted Pratt truss spans, each of 200 feet. and is 35 feet high in the clear above the average water level during construction. (See technical description below.)

On June 30, 1911, the first through train from Pukow, reached Hsuchow-fu. On October 20, the track laying of the southern section was completed, the rails reaching the Grand Canal in Shantung province.

A substantial road bed is a necessity on a Chinese trunk line, as the large quantity of freight obtained requires heavy trains to transport it, and these can only be drawn by powerful locomotives having necessarily a large axle load. Therefore, the track of both main lines and sidings, has been laid throughout with an 85lb. rail, and thoroughly ballasted with broken stone. The ties are creosoted Oregon pine over most of the line, and also of Japanese hard wood. The rails and most of the fastenings were made at the Chinese mills at Hanyang.

The total length of waterway on the railway is 22,947 feet, equivalent to 97 feet per mile of line, which is not surprising when it is remembered that the route runs parallel to the coast of a large continent. Altogether there are about 300 bridges and 500 culverts. The principal bridges are as follow:—

Hwai River bridge, 1,876 feet, in nine 200 feet spans.

Fei River bridge, flood opening 2,119 feet, in 62 spans of 30 feet.

Tse River bridge, 1,208 feet, in five 200 feet spans, and three fifty feet spans.

Huei River bridge, 925 feet, in one 200 feet span, and ten 40 feet spans, and ten 30 feet spans.

The bridges are all built of cement concrete or stone, with steel girders, no brickwork being made use of.

The workshops of the southern section are situated in a corner of the old City of Pukow. They are of moderate size, but laid out in the most up-to-date manner, so that they can deal with a great amount of work. They can, if necessary, be increased up to eight times their present size, without disturbing the existing arrangement. They were commenced in the spring of 1909, and the Foundry and Worshop were in working order before the end of February, 1910. Since then not only has all rolling stock been erected in the shops, but eight brake vans, and four Engineer's inspection cars have been constructed. Two passenger cars have been converted into sleeping cars.

Water tanks, water cranes, platelayer's trolleys, all castings required for the construction work, etc., have been made in these works, everything possible being made in China.

In the workshops, one foreign foreman is employed, but on the construction works elsewhere, Chinese foremen have been exclusively employed, and are found, under experienced Engineers, to be quite equal to all that is required of them.

The station buildings have been erected on a common design, without any pretence to ornamentation, the chief aim being to secure efficiency with economy. Some of the stations are not yet completed, precedence being given to the erection of godowns, for which there is a great demand and need. All the buildings have been made as simple as possible in accordance with instructions originally received from Peking. Many of the buildings will probably have to be augmented as time goes on, but the smallest are calculated to meet the needs of the next few years.

Cost of Construction

The cost of construction of the southern section works out at some £10,692 per mile, including rolling stock and equipment, and although £2,528,822 was expended to November 30, 1912, and the line is not yet completed, there is still sufficient to meet all needs and the cost will come within the original estimate of £3,969,730. It is only fair, when considering the cost in sterling to mention that the enormous difference between the actual expenditure and the estimate is to some extent due to the high rise in exchange, which makes the estimate appear larger than would have been the case had it been based on an average rate of exchange. And, if the funds originally arranged for are supplied, they will not only be sufficient to complete the line but also meet the cost of the extra amount of rolling stock, out of all proportion to that of most railways in China, necessitated by the extraordinary amount of traffic.

The following is a memorandum of cost to November 30, 1912:—

	£	£
Loan floated in London....	2,960,000	2,960,000
Discount on bonds and commuted profit on above:..	247,000	.....
Actual amount credited to Railway	2,712,100	2,712,000
Loan made to German Section in 1911 and not yet returned	250,000	.....
Nett amount of Loans received by Southern Section	2,462,100	2,462,100
Advances from Loan Syndicate	173,000	.....
Total actual amount of Capital received by Southern Section	2,635,100	2,635,100
Cash Balances in Banks and Head Office	106,278	.....
Actual amount of Capital expended by Southern Section, to 30 Nov., 1912.....	2,528,822	2,528,822
Interest on Loan, and Bank Commission	473,084	
Interest received on Bank Balances	109,984	
Nett amount paid for interest	363,100	

The length of Main Line only, not including sidings quarry branches, etc., is 236¼ miles. The cost *per mile*, including rolling stock and all equipment, has therefore been up to the 30th November, 1912, £10,692.

The Engineer-in-Chief's estimate for the total cost of the Southern Section, was 24,612,321 Kuping Taels, equal to £3,969,730 so that there is ample margin for completion.

For comparison with the cost of Railways built by shareholders, and which do not pay interest during construction, the nett amount of interest, £363,100, should be deducted from the total; the cost then works out at £2,165,722 or £9,157 per mile.

The following are the revenue earnings for the southern section for:—

October.....	$229,000
November.....	226,000
December.....	235,000

The work of construction was carried out under the supervision of Mr. T. W. T. Tuckey, M. Inst. C. E., Engineer-in-Chief.

THE HWAI RIVER BRIDGE

Allusion has been made in several places in the foregoing article to the Hwai River Bridge, and as the work of construction supplied a very interesting demonstration of bridge building under difficulties, we append some technical notes, with acknowledgments to the *Engineering Record*:—

Foundation Conditions.—The single-track bridge is 1,885 ft. long over all and about 35 ft. high in the clear above the average water level during construction. It has nine through riveted Pratt truss spans 209 ft. long over all, which are supported on two masonry abutments with concrete footings and pile foundations and eight concrete piers with rock foundations within the flood channel. At the bridge site the surface of the rock varies from about 83 to 19 ft. below mean low water level and is covered with clay and mud up to a depth of 60 or 70 ft., except under spans 4 and 5 and portions of adjacent spans across the low water channel, where it is scoured nearly or quite bare. The heights of the piers vary from 50 to 111 ft. and they have uniform dimensions of 9 × 31½ ft. under the coping.

Operations at the site were commenced about Dec. 18, 1909, at the beginning of the low water period following the highest summer flood recorded in many years. The abutment excavations, well outside the flood line, were only 10 or 15 ft. deep and were easily made without sheeting, and the foundation piles were driven in them by a 2,000-lb. hammer operated by a hand windlass. The work was slow, but on account of the high price of coal and the small price of labor it was considered economical and satisfactory. After the completion of the footings the abutments were built as rapidly as the ashlar masonry was delivered from the local quarries and were finished on Aug. 15, 1910, and Jan. 15, 1911.

Piers 1, 2 and 3 are located beyond the low water shore line where the rock is not very far below the surface, and were built in open excavation, sheeted where necessary to retain the sides and exclude the water. Pier 3 is located on a rock reef in the channel near the south bank of the river, which was exposed at low water. Work on it commenced Dec. 14, 1909, and was completed March 15, 1910, without difficulty, the excavation being carried to a depth of 21½ ft. below mean low water level through clay and rock without the necessity of timbering.

Excavation for Pier 2 was commenced in December. 1909, and was completed March 15, 1910, at a depth of 33½ ft. below mean low water level. After concreting was commenced a flood submerged the pier site to a depth of 10 ft. and delayed the work until December, 1910, when it was resumed and completed in February, 1911.

Pier 1 was excavated 36½ ft. below mean low water and 49 ft. below the surface of the ground through fine running sand, for which sheeting and heavy timbering were necessary. The excavation was very much delayed by the March flood, which, although it did not overflow the bank, caused a serious influx of sand. Soon after rock was uncovered the pit was filled by the flood and work was abandoned for about a month and finally completed about ten months after commencement.

Pneumatic Foundations.—Piers 4 to 8 inclusive have foundations on steel pneumatic caissons sunk from 22½ to 45½ ft. below mean low water level. The caissons, from 10 to 50 ft. high, are 16 ft. wide and 38 ft. long with rounded ends and have an inner shell 4 ft. from the outer shell and connected to it by vertical lines of zig-zag transverse bracing about 3 ft. apart, and by the inclined side walls of the working chamber, 8 ft. high, which reach from the cutting edge to the bottom of the inner shell. They are made chiefly of steel plates from 5/16 in. thick at the cutting edge to ⅜ in. thick at the top, with lapped joints hand-riveted and calked.

As the sites of piers 7 and 8 were above water level when operations were commenced, their caissons were assembled wholly in the required horizontal positions resting on the surface of the ground and were excavated and sunk without guides or falsework. They were 10 ft. in height and the concrete below the footing was reinforced by 32 vertical lines of ⅞ × 4 in. steel bars.

The sites for piers 4, 5 and 6 being submerged at all times, their caissons were partly built on

shore, and, after the working chamber and a few feet of the cofferdam walls above it was riveted and calked, they were floated to position and the upper parts of the walls were added as the caissons were sunk.

The construction of the caissons was commenced by assembling the cutting edge on horizontal blocking or launching skids and riveting to it the inclined walls of the working chamber which, when braced across the top, were independently stable. The deck and the inner and outer shells were then successively added, the steel plates being handled by guyed derricks and the rivets being driven by hand.

Work was commenced first on the caisson for pier 7, which was started Dec. 15, 1909, as soon as possible after the receipt of the first air compressor. Sinking under air pressure was commenced Jan. 7, 1910; rock was reached at the end of March, soon after which the pier was submerged by the spring flood and work was suspended until May 29. The concreting of the working chamber was completed June 15, when, the top of the pier being still submerged, work was suspended until Nov. 15. Then an earth cofferdam was built around the pier, the shafts pumped out and the pier completed up to the coping on Dec. 5.

Three more air compressors, which, like the first, had each a capacity of 220 cu. ft. of free air per minute, were supplied by the Imperial Railways of North China and, being delivered like the rest of the machinery by junks through the Grand Canal, arrived piece by piece at intervals. They were installed on the north bank of the river near pier 8, and as their capacity was adequate for only two caissons at once, the sinking of the other piers could not be commenced until 7 and 8 were finished.

Work on pier 8 was commenced in the latter part of February, 1910, and was prosecuted continuously until the caisson was landed 4 ft. below the surface of bed rock in the end of June, and the pier was completed to the coping on Aug. 16, 1910. The cutting edge was sunk 68 ft. below mean low water, or 90 ft. below the surface of the ground. The caisson work was executed in four-hour shifts and there were two deaths due to air pressure. This caisson was founded during high water at a depth of 88 ft. below water level and required a maximum pneumatic pressure in the working chamber of about 40 lb.

Pier 5 is located in the river channel where the water is 30 ft. deep at its lowest stage. The river bottom here has an uneven rock surface scoured clean by the swift current. The caisson was built on shore to a height of 20 ft. above the cutting edge and, weighing about 50 tons, was rolled on the launching ways to water about 4 ft. deep and delivered to a 22 × 60 ft. wooden tower about 20 ft. high. The tower was mounted on two wooden pontoons, one on each side of the caisson, which was suspended from it by four vertical screws 4 in. in diameter and about 8 ft. long. The screws were attached at their lower ends to steel links 4 in. wide, ½ in. thick and 3 ft. long, and at their upper ends engaged capstan nuts in two overhead king-post lifting trusses in the tower.

The air space between the walls of the caisson provided considerable buoyancy, and after the screws were adjusted to transfer a small portion of its weight to the tower, the caisson was towed, partly suspended and chiefly floating, to approximate position, where it was held by six 2 in. Manila tackles running to upstream and downstream anchors.

The anchors were T-shape in plan with a stem made of two 85-lb. rails 30 ft. long spaced about 12 in. apart by means of timber blocks and a cross-beam to prevent overturning, made of a third similar rail. Inclined slightly from the vertical and bolted securely at the intersection of the stem and crossbeam were two hardwood cross-ties. These were sharpened at the lower end and projected about 18 in. below the bottoms of the rails so as to embed themselves in the river bottom. The anchor rope was attached to the long end of the stem. This device proved efficient and satisfactory for mooring purposes to maintain the caisson in position in the strong current. A crew, however, was constantly employed on the pontoons to look after the anchorage in case of emergency.

The caisson suspension links were pin-connected at their lower ends to two horizontal transverse plate girders built into the caisson just above the roof of the working chamber and projecting through the outside wall. These girders stiffened the caisson without injuriously obstructing the interior, and, being sufficiently far below the surface of the water not to obstruct navigation when the caisson was landed, were allowed to remain permanently in the work.

As soon as the caisson was moored, hand-mixed concrete was filled in between the shells. The concrete was made of Green Island Portland cement manufactured near Hongkong, broken stone 1½ to 2 in. in diameter and local sand delivered in boats from pits about 10 miles distant.

Sinking was commenced at the end of February, 1910, and successive courses of the wall plates were added as the caisson descended, At the end of May it was landed on rock in water 50 ft. deep, the screws were detached and the pontoons and tower floated away. The pier footings were established below the lowest water level so that they would not be exposed at low water. At this level the inner

THE HWAI RIVER BRIDGE, ON SOUTHERN SECTION TIENTSIN-PUKOW RAILWAY (1,876 FEET IN LENGTH—9 SPANS OF 200 FEET)

shell was discontinued and a detachable joint was provided for the upper part of the outer shell, which, after the completion of the pier, was removed by unscrewing the long bolts which projected above the surface of the water. For this detachable section of the cofferdam interior timber bracing was provided.

The use of long lowering screws was avoided by the combination of screws and links. By lowering the caisson until the links were sufficiently slackened one of the suspenders at a time could be disconnected and the screw varied sufficiently to permit a new set of links to be added.

The 4 in. air main from the compressor was supported for about 200 ft. on a raft of 12 × 12 in. timber where the water was so deep and the bottom so rocky that piles could not be driven. This raft was held in position by anchors placed about 20 ft. apart. Inshore, where the water was shallow and there was sufficient earth for pile driving, the pipe was supported on a light pile trestle, and for pier 4 the compressors were moved to the opposite bank of the river.

On Aug. 13, the air locks were submerged by a summer flood which also submerged the derricks and other plant, but did not carry away anything of importance. Excavation was resumed Sept. 16, sinking was completed early in October and the working chamber filled with concrete prior to Oct. 15 and completed to the under coping early in February, 1911.

Pier 4 was built, launched, and towed into position and lowered in the same manner as pier 5. It was landed on the river bottom early in October, excavation was commenced in November and was completed in the latter half of December and the pier was finished to the coping early in March, 1911.

The caisson for pier 6 was built on shore to a height of 12 ft., launched on a boat and towed to approximate position and landed there on a temporary deck under a tower on a pile foundation that was built in December, 1909. The caisson was delivered and sinking through the mud was commenced in February, 1910. The work was submerged during the March flood and was resumed in June. The caisson was lowered during July, again abandoned on account of the August flood and work on it was resumed in September. Air pressure was put on in November, the caisson was landed on rock in the end of February, 1911, and the pier was completed to the coping at the end of March.

Each caisson was provided with two air shafts 3 ft. in diameter surmounted by air locks of a special type previously used by the Imperial Railways of North China. The locks were about 8 ft. long, 8 ft. high and 4 ft. wide, with dome-shaped tops and bottoms and vertical cylindrical sides and were made with three chambers. The front or entrance chamber was provided with an interior and ex erior door. The interior door opened directly into the central chamber, which was provided with a circular opening directly over the shaft. The back of the central chamber was provided with a rectangular opening into the rear chamber. The hoisting drum was located on the inside of the central chamber directly under the roof and the drum shaft passed through the wall of the lock and was operated by a steam hoisting engine fastened to the outside of the central chamber. The rear chamber was fitted with a muck chute provided with quick-acting locks. The muck kibbles were swung through the rectangular opening between the central and rear chambers and dumped into the muck chute.

After the caisson was landed a concrete chute with quick-acting locks was placed in the roof of the central chamber. The concrete was mixed by hand, carried in baskets by coolies and dumped into the concrete chute. An incline was provided leading from the mixing board to the concrete chute.

Falsework.—The superstructure, weighing about 2,500 lb. per linear foot, was all erected on pile falsework with bents at panel points about 25 ft. apart, made of piles long enough to serve without the addition of framed bents above them. Each regular bent had five 12 × 12 in. vertical posts spaced 6 ft. center to center and capped by a 12 × 12 in. timber 30 ft. long.

The bents had a 6 × 12 in. transverse strut at the water level and were X-braced in the panel above the water level. Longitudinally they were braced by three lines of 6 × 12 in. horizontal ledger pieces bolted to the intersections of the transverse brace with the center and outside piles. At the ends of the span these ledger pieces were supported on and thoroughly bolted to 12 × 12 in. horizontal timbers bolted across the faces of the pier, to which they were secured by five 1 in. bolts passing through the piers and removed when the falsework was taken down.

The bents supported five lines of stringers on the center of the piles. The two outside lines were single 14 × 14 in. timbers to carry the traveler track. The other were single lines of 12 × 12 in. timbers lapping joints on the caps. The rail stringers were spliced at the joints with 6 × 12 in. fish plates and were

continuous across the tops of the piers, to which they were firmly secured by pairs of ¾ in. wedge bolts. The rail stringers were fastened to the caps at each intersection with ¾ in. nailing bolts. All timber for falsework and all other purposes was Oregon fir, imported in large sizes and sawed by hand at the site.

Where the water was very deep piles were made of two pieces spliced with butt joints and fish plates, and for spans 5 and 6, where the water had a maximum depth of 40 to 50 ft., they were made of 14 × 14 in. timbers. Here the rock bottom was uncovered, and the piles were provided with forged steel points and driven to penetrate in the soft surface of the rock. Rails were bolted to these piles to prevent them from floating and they were temporarily stay-lathed to maintain them in position until a system of permanent bracing could be put in.

Additional stability was provided by bracing each bent in these spans with 14 × 14 in. spur piles inclined 1:4 and driven by a drop hammer running in inclined ways, which moved on top of the falsework. The spur piles were not driven in the plane of the bent, but adjacent and parallel to it, and were bolted across the faces of the vertical piles, intersecting the outer pile at the water level and the adjacent intermediate pile at the cap. The stringers carrying the bridge floor rested directly on the heads of the spur piles.

In these spans the caps were secured to the piles by wooden scabs, and the panels between them were X-braced by 6 × 12 in. horizontal timbers. All falsework connections were made by ¾ in. bolts. The piles were driven by several floating machines built by the engineer in charge and equipped with 2,000 lb. hammers operated by hand. Each machine required a crew of men.

Erection of Steel.—The steel was stored in the yards at both ends of the bridge and was skidded on greased rails by manual labor to standard-gauge push cars and erected from them by two travelers, working out from the abutments at both sides of the river. Each traveler had an ordinary gallows-frame about 40 ft. high and 45 ft. long over all, made of two 12 × 12 in. vertical posts 24 ft. apart, two 10 × 10 in. inclined posts and a 9 × 18 in. cap. It was seated on two 12 × 12 in. longitudinal sills 25 ft. long, to the ends of which it was braced by 12 × 6 in. diagonals reaching nearly to the cap and giving it longitudinal stability. It was mounted on eight 10 in. double flange wheels running on the 24 ft. gauge track, and was provided with two eight-part Manila rope tackles suspended from the caps and operated by hand windlasses manned by eight men each, which easily lifted the maximum weights of about 6 tons which were imposed by the top chord pieces.

A GENERAL VIEW OF THE HWAI RIVER BRIDGE

Cross pieces of 12 × 12 in. timber were laid on the falsework stringers at panel points and on them the traveler set the 36 in. I-beam floorbeams on pairs of camber wedges and assembled to them the I-beam stringers. After the floor system was completed the traveler assembled the lower chords to the floor beams and then erected the vertical posts and inclined posts, which were temporarily stable on account of the rigidity of their bolted connections to the bottom chords. The top chord pieces were then assembled into position on the web member, transverse braces added and the field rivets driven by about 20 gangs of four men each.

The erection of span 1 was commenced early in December, 1910, immediately after its delivery at the bridge site, and was completed in the same month. The erection of span 9 was commenced late in December, 1910, and completed Jan. 18, 1911. The entire superstructure, with permanent decking, was completed and opened for construction traffic on May 15, 1911.

The bridge was erected before the granite pier coping 2 ft. thick was set, the trusses being temporarily supported on cribbing placed on top of the concrete. After the superstructure was erected the coping was delivered at night on the service track on the bridge floor and after it was set the pedestals were placed on it and the spans lowered to permanent bearing on them.

The principal quantities in the work include 5,556 cu. yd. of concrete footings in the piers and abutments, 4,074 yd. of concrete in the piers above the footings, 385 yd. of granite pier coping, 556 yd. of granite ashlar in the abutments, 10,600 barrels of cement and 2,500 tons of steel. The steel was fabricated by Wright, Headson & Company, Ltd., of Motherwell, Scotland.

All work was done by native labor under Chinese foremen, many of them trained on similar work in North China, who proved to be excellent workmen. The foreign staff under whose direction the work was performed consisted of Mr. T. W. T. Tuckey, M. Inst. C.E., engineer in chief; Mr. T. J. Bourne, M. Inst. C.E., executive engineer of the second district, and Mr. E. B. Naylor, M. Am. Soc. C.E., engineer in charge of construction.

HEMP IN THE PHILIPPINES

A Shortage Predicted

According to a Manila paper of December 6, M. F. Loewenstein, president of the Pacific Commercial Company, predicts that there will be a shortage of hemp next year. He had just returned from a trip through the hemp districts of southern Luzon and he based his observations on what he saw and reports from correspondents in other hemp producing districts.

"Unquestionably the drought which the islands experienced in the early part of the year did a great deal of damage to the hemp fields of southern Luzon," he said. "Opinions differ as to the extent of this damage. Weather since July has been ideal for the growing of hemp and but for the fact that considerable over cleaning has been indulged in there would probably not be much of a falling off in receipts next year.

"In anticipation of the drought and due to the very extraordinary consumption of hemp throughout the world, prices commenced advancing in July until they practically doubled. Owners, and the laborers stripping hemp, who in lieu of pay receive 50 per cent. of the hemp stripped, had been accustomed to ruinous prices for the last three years. When, therefore, values advanced they could not withstand the temptation to strip most of the hemp which was fit for cleaning regardless of consequences in order to take advantage of these high prices. Thus they discounted the future and it is due to this fact that receipts of hemp at Manila and Cebu instead of declining during the past three months, as had been expected, showed an increase of 118,517 bales as compared with last year.

"However, there is bound to come a time of reckoning and the general opinion is that it will come next year, principally during the first six months. No estimates are alike as to the shortage which may be expected. The most conservative people I met in southern Luzon insist it will be 25 per cent. whereas estimates go up all the way to 40 and 50 per cent. Southern Luzon, namely Ambos, Camarines, Albay and Sorsogon, produced last year about 600,000 bales, and figuring conservatively it is, therefore, safe to assume that the shortage will not be less than 150,000 bales from that quarter.

"The typhoon of October 16th in southern Leyte destroyed to a very considerable extent what hemp had escaped the drought in that district and it is most likely that the shortage there will amount to 100,000 bales.

"According to the advices of our representatives in that part of Samar which was lately hit by a typhoon a good deal of over cleaning has been going on as well, so that even if this typhoon had not done considerable damage there would probably be less hemp from there during the coming years.

"Just what damage the last typhoon has done I am unable to state but in view of the above observations it is safe to predict that the production of hemp next year will not exceed 1,110,000 bales which is considerably less than the world's requirements have been during the last three years."

RAILWAY EARNINGS IN CHINA

Necessarily it will be some time before it is possible to give accurate periodical returns of the earnings of railways in China, but it will be seen elsewhere in our columns that we have been able to give a considerable amount of information in this connection. In the near future, when the reorganization now being carried out by the Board of Communications is complete, we hope to be able to supply this information in regular form. There is every reason to suppose, unless something now unforeseen occurs that the earnings of the existing railways during 1913 will show a progressive increase.

The management of the Peking-Mukden line have much to congratulate themselves upon in respect of the result of last year's working. The earnings totalled $13,124,000, which is a record, whilst the working expenses were less than a third, some 32%. There was an all round increase in traffic and the demand for transportation seems to be a sustained one, for the management are hopeful of making further records by this year's operations. The 1912 results have not been approached before except in 1905, when the Russo-Japanese war was on, and that might be classed as an abnormal time, whilst 1912 was normal.

We understand that it is contemplated to improve the passenger cars on this line. In fact there is a general demand for more rolling stock throughout the country, and if it is complied with the total railway earnings are likely to show an all round increase.

U. S. RAILWAY RECEIPTS AND EXPENSES FOR SEPTEMBER

The business of the railways of the United States of America for September while showing a considerable improvement over that of September 1911, does not maintain the rate of increase set by the record-breaking month of August. The total net operating revenue of 90 per cent. of the steam railways increased $5,896,840 for September, while the increase for August was $13,865,622. This increase in net operating revenue was at the rate of $21 per mile of line for the month or at the rate of 70 cents per mile of line per day.

The total operating revenues per mile of line for the month increased 6.5 per cent., the operating expenses 7.3 per cent. and the net operating revenue 5.1 per cent.

The foregoing statistics are from the summary made by the Bureau of Railway Economics from the reports of the railways to the Interstate Commerce Commission. A special committee of the railways having headquarters in Chicago reports that bills now pending in the Federal Congress providing for an increase in the number of employees of the railways and for the rapid substitution of steel for wooden equipment will, if enacted, place the railways under an additional expense of approximately $12,000,000 per annum for the former, and a total expense of $632,746,000 for the latter purpose. Without compulsion, the railways in the course of three years have increased their steel equipment 750 per cent. and their steel underframe equipment 256 per cent.

THE ABOVE PHOTOGRAPH OF PRESIDENT YUAN SHIH-KAI IN COMPANY WITH THE AMERICAN AND JAPANESE MINISTERS WAS TAKEN ON JANUARY 2, WHEN THE PRESIDENT HELD A RECEPTION AT HIS YAMEN, AT PEKING. MOST OF THE FOREIGN MINISTERS ATTENDED, BUT THE PHOTOGRAPH HERE SHOWN WAS TAKEN AT THE CONCLUSION OF THE RECEPTION, AFTER THE OTHER MINISTERS HAD DEPARTED, AND UPON THE SUGGESTION OF ONE OF THE GUESTS. IT DOES NOT IMPLY IMMEDIATE RECOGNITION OF THE REPUBLIC!

CHINA'S BUDGET

Estimates for January-June, 1913

Revenue

With the re-establishment, to some extent, of orderly conditions it has been found possible to compile the Budget for the first half of the second year of the Republic. The total revenue is estimated at $51,336,879,96, made up as follows:—

(1) Board of Foreign Affairs	$ 18,440.00
(2) Board of Finance	2,679,169.30
(3) Board of Education	89,912.02
(4) Board of Agriculture and Forestry	14,530.97
(5) Board of Communications and Posts	276,280.00
(6) Total Revenue of provinces to be remitted to Board of Finance	18,551,846.07
(7) Total Revenue from various Maritime Customs	29,706,701.55

Expenditure

The estimated expenditure of the various Boards in Peking during the period in question is as follows:—

	Expenditures *Ordinary*	Expenditures *Provisional*
Board of Foreign Affairs	$ 1,579,355.60	$ 453,787
Board of Interior	1,835,190.81	300,500.64
Board of Finance	6,948,848.76	3,867,103.19
Board of Education	2,238,801.00	4,048,850.00
Board of War	?	?
Board of Navy	1,724,954.00	8,229,250.00
Board of Justice	740,438.40	361,587.00
Board of Agriculture and Forestry	1,369,228.12	1,545,325.00
Board of Industry and Commerce	13,319,656.00	110,000.00
Board of Communications and Posts	437,431.74	102,066.00
	110,193,914.43	19,018,468.83

This shows a shortage of $77,875,503.

Loan Expenditure

In addition to the ordinary expenditure there are the foreign and domestic loan obligations which have to be met in the first half year of 1913. These amount to $79,199,844.91, made up of the following sums:—

A.—(1) Foreign Loans—Shanghai Tls. 38,150,00—£2,823,-946-3-4 Fcs. 5,556,905.-00=	$32,951,467.00
(2) Indemnity Loan—Haikwan Tls. 9,949,-650.00=	16,118,433.00
(3) Provisional Advances from the Group, Shanghai Tls. 12,800,000=	17,645,600.00
(4) Foreign Short Period Loans contracted by the Central Government	10,044,342.00
Total	$ 76,759,842,00
B.—(1) Domestic Short Period Loan	$1,090,475.00
(2) Domestic Public Loan	1,349,527.91
Total	$ 2,440,002.91

THE HUKUANG LINES

LOAN DIFFICULTY ARRANGED

The negotiations which were opened some time ago between the Minister of Communications and the Banks interested in the Hukuang Loan have reached a conclusion, and therefore money will soon be available for the commencement of work on the lines. The suspense connected with the negotiations for the big reorganisation loan had some effect in preventing the Hukuang question from being settled. Diffidence to advance the money was caused by the Revolution making the security doubtful and in pursuance of their desire for a revision of that aspect the Bankers touched on other points which the Minister for Communications could not see his way clear to concede. The money now, however, will be advanced, the Chinese agreeing to the appointment of auditors as employees of the Government. The line will be collateral security until the original security is deemed satisfactory. The money will be deposited in the foreign Banks until an arrangement is made with the designated Banks.

There were many rumors afloat with regard to the desire of the recently appointed Managing Director, General Hwang Hsing to retire, and his resignation has now been officially accepted. It is said that he felt that he should not be under the direction of the Board of Posts and Communications. Another report has it that he has effected a rapprochement with General Li Yuan-hung, and that the two are spoken of as the possible President and vice-President of the Republic. This may be taken for what it is worth. It is a pity, if it is true, that a little more time is not devoted to the practical things of the country, rather than to a constant flight after the bubble reputation.

SURVEY OF THE HUPEH-HUNAN TRUNK LINE

The survey of the northern section of the trunk line from Canton to Hankow, that in Hupeh and Hunan, is continuing as rapidly as is possible, according to latest reports. We are informed that the survey from Wuchang to Yochow, on the north-eastern extremity of the Tung-ting Lake, has been completed, the distance being some 160 miles, whilst parties are now pushing through between that point and Changsha, and between Lukow and Heng Chow-fu. Three parties are running preliminary surveys between Heng Chow-fu and Yichang-hsien, on the border of Kwangtung and Hunan, with the object of finding the easiest road through this difficult piece of country. Altogether ten survey parties are operating between Yochow and Yichang.

This line promises to be one of the most picturesque as a travelling route in China proper. The country is reported to be extremely picturesque, well wooded, and in addition is rich in minerals. There are magnificent gorges to be penetrated, especially in the Nanling Mountains, on the border, and in crossing this range the line will reach an altitude of from 1,200 to 1,300 feet, the highest on the route. There will be some very long bridges, and, unless a better route can be found than that originally surveyed on the Sinling Mountains, one of the longest tunnels in the world will have to be pierced. This, it is hoped, will be averted, and for that reason special attention is now being given to the surveys in the locality by three different parties.

Taking it all in all the line will be a heavy one to build, and presents numerous difficulties from an engineering point of view. For the first ten miles from Wuchang the country is flat. It then runs into the hills, gradually crosses the tea districts of Yang Lou-su and Yang Lou-tung, and goes on to Yochow. From Yochow the line will run as direct as possible to Changsha, and then to Chuchow at the junction of the Liang Shui River and the Siang River, which latter will be paralleled to an extent for a considerable distance.

From Changsha to Chuchow the line has already been constructed by a Chinese provincial company, the distance being about 35 miles. This will be merged in the main line. Chuchow is also the junction with the Pingsiang Colliery line. From there the main line will run south, past the sacred mountain of Hengshan, to Heng Chow-fu, from which city the valley of the Lei river will probably be followed, passing through the Nanling Mountains and connecting with the line in course of construction from Canton.

THE CHANGSHA-CHUCHOW LINE

The local company controlling the section of the line already constructed and operating between Changsha and Chuchow is holding out for an exorbitant price for the line, especially when its present condition is taken into consideration. The embankments in numerous places are in bad condition, and where the line parallels the river Siang erosion is constantly going on, with no attempt on the part of the operating company to take preventive measures or even repair the damage done. In the past, of course, concrete of a poor quality was used in places, but work in this direction ceased over a year ago.

The permanent way is likewise badly neglected, the sleepers rotting and ballasting being compelled to take care of itself. The price being asked is Tls 8,000,000 for 105 *li* of line, or about 35 miles.

At Changsha this line starts from the north gate station, skirts round the east wall, and reaches the river south of the city. It then parallels the bank for some distance, and is open to the effects of the water even at mean height. When the main line is under construction the route will, at this point, no doubt, be further removed from the river, or be built under different methods. The ballasting is of gravel, and the gauge standard.

On the line there are four or five bridges, none above 200 feet long, the ironwork, it is reported, being imported and erected by the Yangtsze Engineering Works of Hankow. There are five stations on the line, some of the buildings being substantial brick structures, whilst others are mere huts. Telephone and telegraphic connection exists between the stations, though one wire serves for both purposes.

The programme originally entertained for the erection of work shops and a round house were suspended some time ago owing to the progress made with arrangements for the commencement of work on the main line, but the walls of the round house are up, the location being at the Hsin-ho station at Changsha, where there is a turn-table built by the American Bridge Company. In the absence of shops of their own the Company has most of their repair work done at the shops of the Pinghsiang Colliery road.

The following is a list of the rolling stock of the road: Two Baldwin Mogul engines (eight wheels of which six are driving) with separate tenders; two Baldwin double enders (ten wheels, of which six are driving); two first class passenger cars and eight second class and third class passenger cars of German construction, and ten freight cars (box, gondola and flat cars) of British manufacture. The cars are fitted with automatic couplers, but are without air brakes, though the engines are fitted with them. Four other Baldwin locomotives and thirty cars were ordered from America for delivery last autumn, and an order was also on foot for Taels 43,000 worth of machinery for the proposed shops, but in view of the negotiations for the purchase of the road this latter order, at least, has, we understand, been held over.

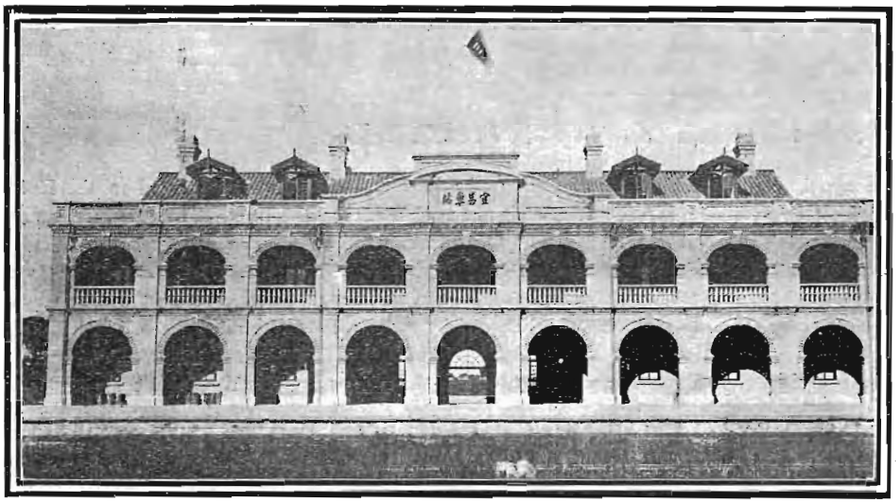
Like most other Chinese privately owned lines this one suffered sadly from financial anemia, the earning capacity being no more than about $200 Mexican per day of which all but $20 was for passenger fares. The line merely connects two river ports and traverses a sparsely populated country, with water competition for freight, and possessed no great earning power, and is not likely to possess any, until extended or connected up with the main line, or until connection with the Yangtsze is effected from Yochow.

It is stated that Taels 6,000,000 have been spent ostensibly on the railway, and running short of funds the company issued its own notes to facilitate their operations. Gladly enough shareholders welcome the chance to see a return of their capital from the Government purchase of the line, but the price at present being asked is so stupendous for what would be obtained that the Government are hesitating before closing any deal, though in the ultimate it will be essential for them to obtain and control the road. As in Szechuan this fact is realised and consequently the native Company is likely to hold out for the highest price that it can get.

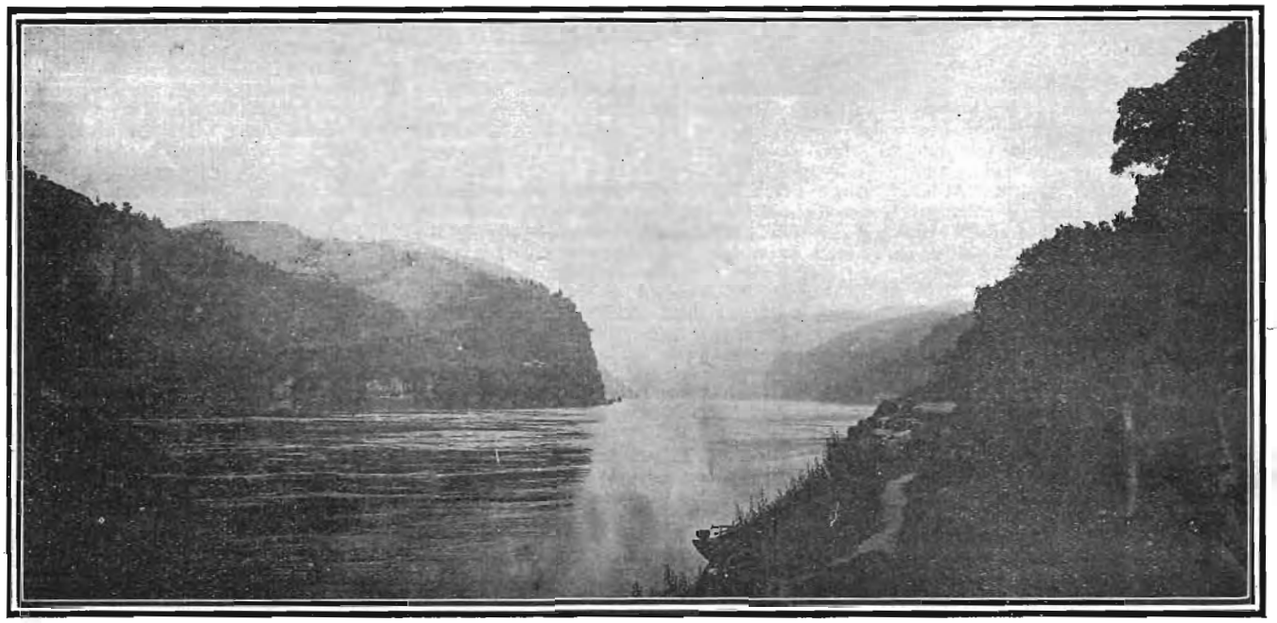
THE SZECHUAN-HANKOW OR CHUAN-HAN LINE

But few railways have the distinction of having caused a revolution, but this is accorded by some to the projected line from Hankow to Chentu, via Ichang, Kweichowfu, Wanhsien and Chungking. Those who are fully informed know that the agitation that arose in Szechuan in consequence of the railway nationalization policy adopted at the instance of H.E. Sheng Kung-pao, simply provided the revolutionary organization with their opportunity, which was successfully seized. To say, however, that the revolution was caused by Sheng's policy or the conclusion of the Hukuang Loan Agreement, is to misread history. It is true, though, that the Chinese for over ten years have been bent upon building the Szechuan Railway themselves, and the desire to avoid recourse to foreign assistance led to the subscription of large sums of money, much of which, however, has been expended in directions from which no return can possibly come.

By Article II of the Hukuang Agreement the Loan was to provide capital, *inter alia*, for:—A Government railway main line from



SZECHUAN RAILWAY—STATION AT ICHANG

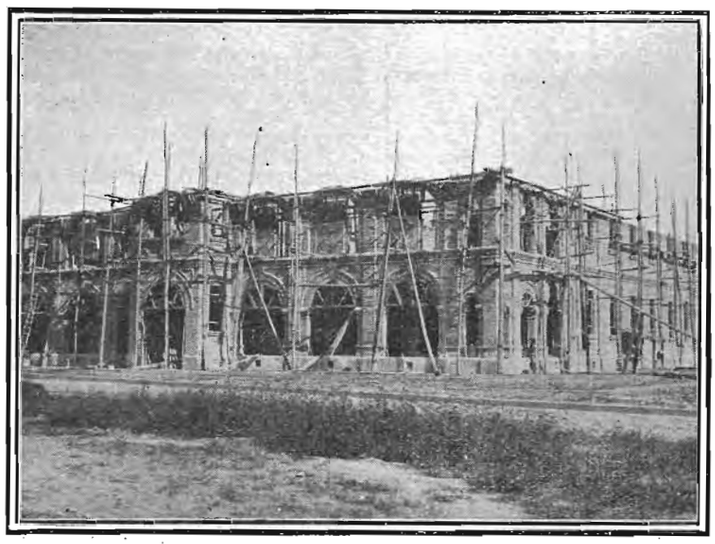


THE YANGTSZE AT ICHANG

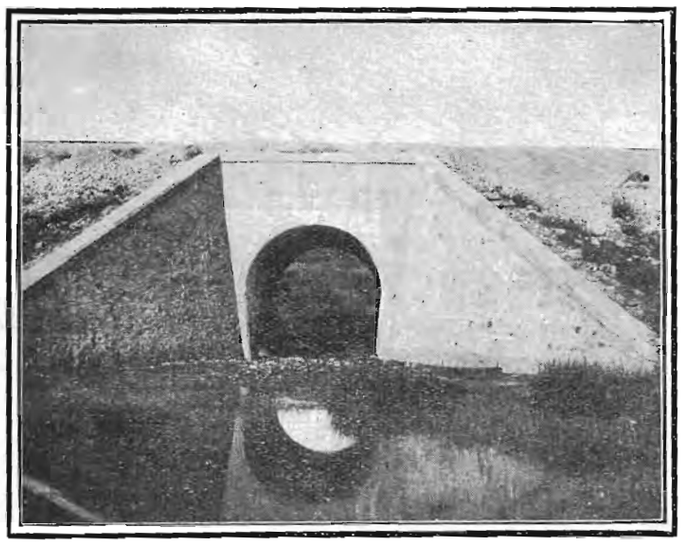
a point at or near Kuangshui in the Province of Hupeh, connecting with the Peking-Hankow Railway line and passing through Hsiangyang, and Chingmenchow to Ichang, an estimated distance of 1,200 Chinese *li*, or 600 kilometres, and from Ichang to Kweichoufu in the Province of Szechuan, an estimated distance of 600 Chinese *li*, or 300 kilometres.—this latter section of the main line having been added in substitution for the branch line from Chingmenchow to Hanyang originally agreed upon, the total length of this main line, hereinafter known as "The Hupeh Section of the Szechuan-Hankow Railway line" being about 1,800 Chinese *li*, or 900 kilometres.

The agreement was signed in May, 1911. By Article III it became incumbent upon the Government to take over the lines already constructed in Hupeh and Hunan. This was resented by the Chinese shareholders, who showed their dissatisfaction in the usual way. It may be remarked in passing that the agitation against nationalization and foreign aid was the more extraordinary in view of the lamentable failure of the company to show results. At a meeting of shareholders held in November, 1909 the accounts submitted showed that a sum of Tls. 15,405,902 (say, £2,006,000) had been collected in shares, taxation, investments of capital, etc. Of this only 28 per cent. had been subscribed voluntarily, the greater proportion of the remainder having been collected as "tsu ku"—i.e., shares given in exchange for forced levy, payable by every landholder in the form of an addition to his land-tax. Though at the time of the meeting the first sod had not been turned and the company had been in existence some five years, the actual balance in hand was only Tls. 10,421,958 (say, £1,357,026). Among other grounds for dissatisfaction it was found that there were on the books 240 employees drawing some £8,500 a year in salaries and wages; the explanation afforded was most inadequate, and as a result certain of the directors and assistant-directors were handed over to the authorities to be dealt with on charges of malversation of the funds.

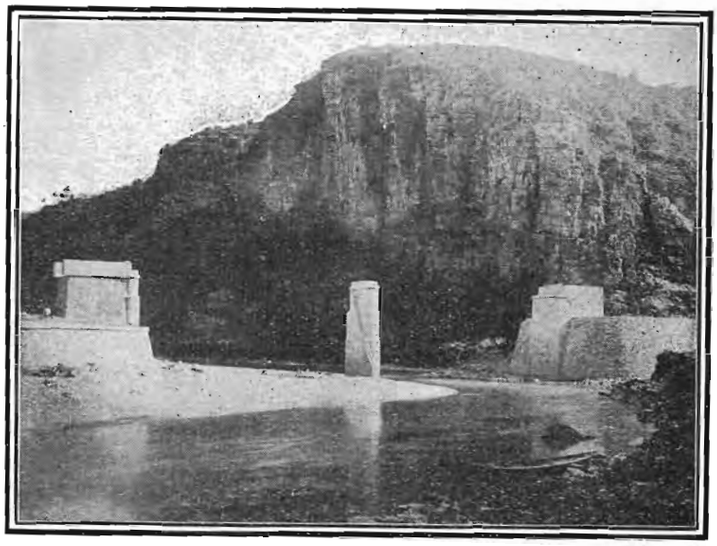
The company had been organized by H.E. Hsi Liang, then Viceroy of Szechuan, in 1904 in order to prevent a foreign loan being raised for the construction of the line. Shortly afterwards the services of two American students, Messrs. Hu and Luk, were secured to survey the line, but nothing came of the survey. The policy of the company was to defer work until sufficient funds were in hand to complete the section from Ichang to Kweichow,



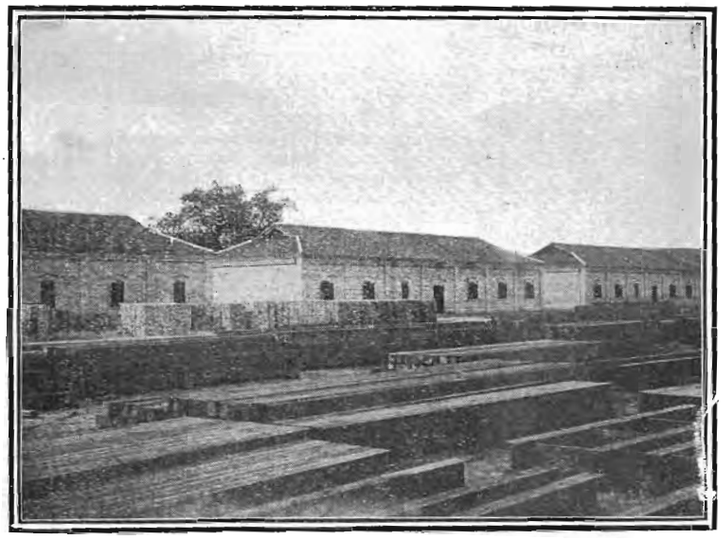
SZECHUAN RAILWAY—HEAD OFFICE AT ICHANG, UNDER CONSTRUCTION



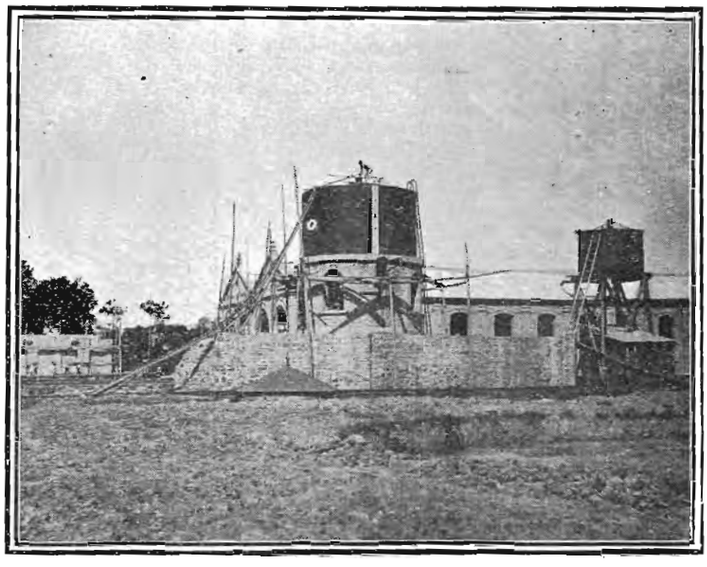
SZECHUAN RAILWAY—AN ARCH BRIDGE



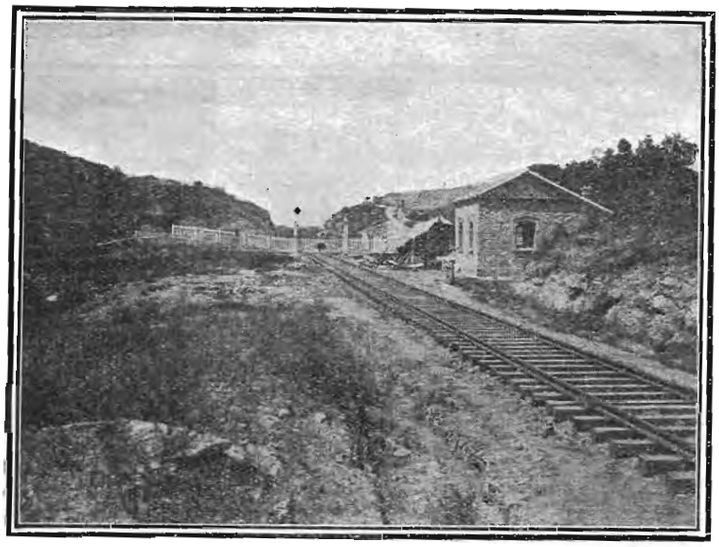
SZECHUAN RAILWAY—TWO 100 FEET SPAN BRIDGE AT ICHANG



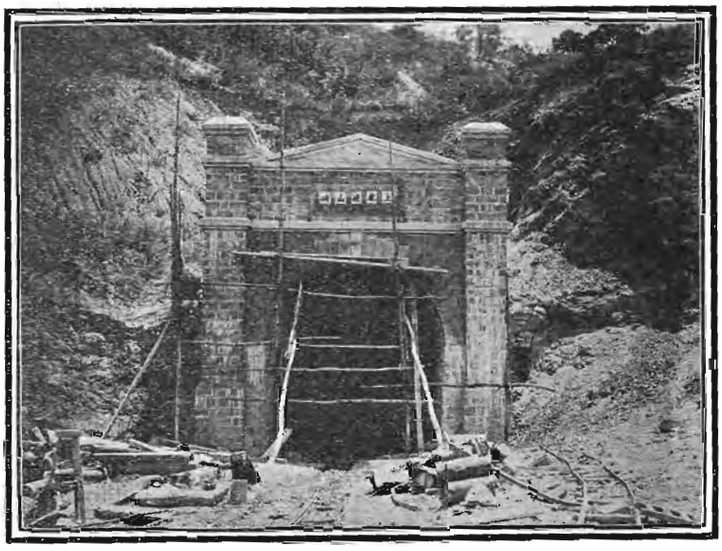
SZECHUAN RAILWAY—STOREROOMS AT ICHANG



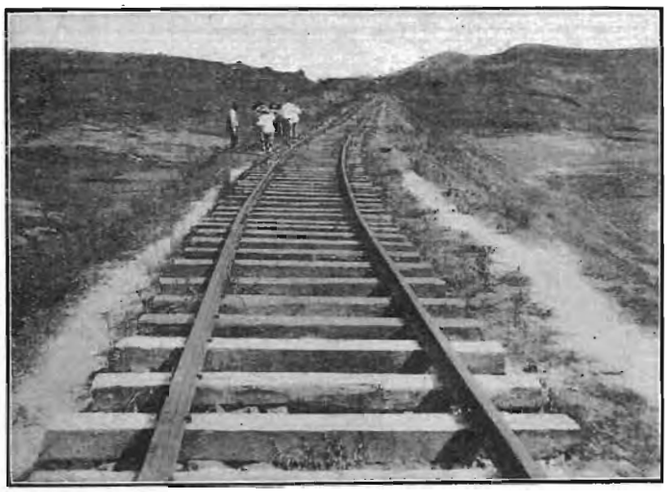
SZECHUAN RAILWAY—WATERTANK WITH ENGINE SHED IN REAR AT ICHANG



SZECHUAN RAILWAY—VIEW ALONG THE LINE



SZECHUAN RAILWAY—TUNNEL NO. 1; 800 FEET IN LENGTH



SZECHUAN RAILWAY—VIEW SHOWING THE GENERAL IRREGULARITY OF THE LINE, A NOTICEABLE FEATURE THROUGHOUT

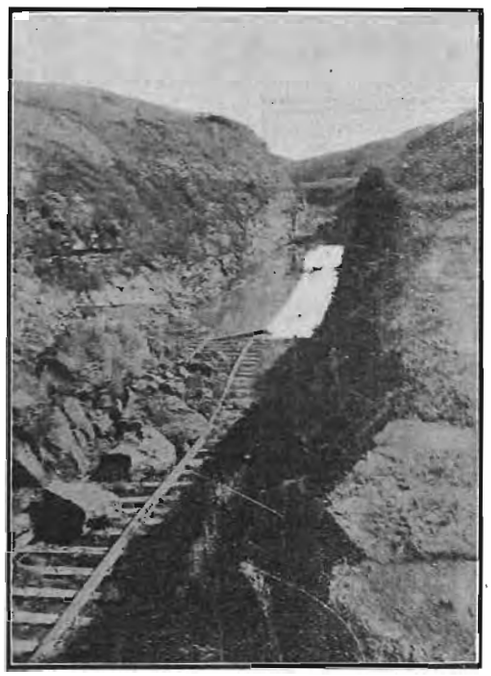
SZECHUAN RAILWAY—SHOWING HOW THE EMBANKMENTS HAVE GIVEN AWAY, AND THE CHARACTER OF THE SLEEPERS

a distance of about 100 miles. A great squabble arose about this time in regard to the question whether the Ichang-Wahnsien section or that between Chungking and Chengtu should be built first. An engineer named Mr. Li, an official of the Yuchuanfu, was borrowed, and he decided that it was best to start from Ichang towards Wahnsien.

Mr. Li Chih-shuen was appointed President of the line and Mr. Jeme Tien-yu, who constructed the Peking-Kalgan Railway, Engineer-in-Chief. As the latter could not be on the spot all the time Dr. Yen Te-ching was appointed Resident Assistant Chief Engineer. Two surveys were made, one inland and one along the Yangtsze and were compared with the object of selecting the most feasible route.

The first sod was turned by Mr. Li, the President of the Company on December 10, 1909 at Ichang, the occasion being made one of great rejoicing. Actual construction did not start until later, the first spike being driven at Ichang on July 21, 1910. The work was pushed ahead with rapidly during 1910. Early in the year 10,000 coolies were employed and by November 15,000 were at work. Up to the time the revolution broke out about 16 miles of railroad to Hsianchi had been laid, although preliminary work had been begun for 60 miles. At present the portion constructed is rapidly deteriorating as will been seen from one of the illustrations accompanying this article.

The administration offices and head station are outside the east gate of Ichang. From there the line goes north-west inland. This is necessitated by the mountainous character of the country. Some idea of the magnitude of



SZECHUAN RAILWAY. END OF PRESENT CONSTRUCTION, SHOWING SUBSIDED EMBANKMENT AND FLOODED CUTTING BEYOND

the undertaking can be gained when it is mentioned that there is fifteen miles of tunnelling through solid rock between Ichang and Wanhsien. Beyond the town of Hsiangchi there is a succession of precipitous mountains and lofty passes. The lowest is 800 ft. high and the highest 4,000 ft. Thence along the Yangtsze until the neighborhood of Wanhsien is reached, the mountains stretch down to the river like the teeth of a comb. Calculations of the time to be occupied in getting the track completed between Ichang and Wanhsien, vary from ten to fifteen years, and the estimated cost is Tls. 38,500 per Chinese *li* (about one-third of a mile.)

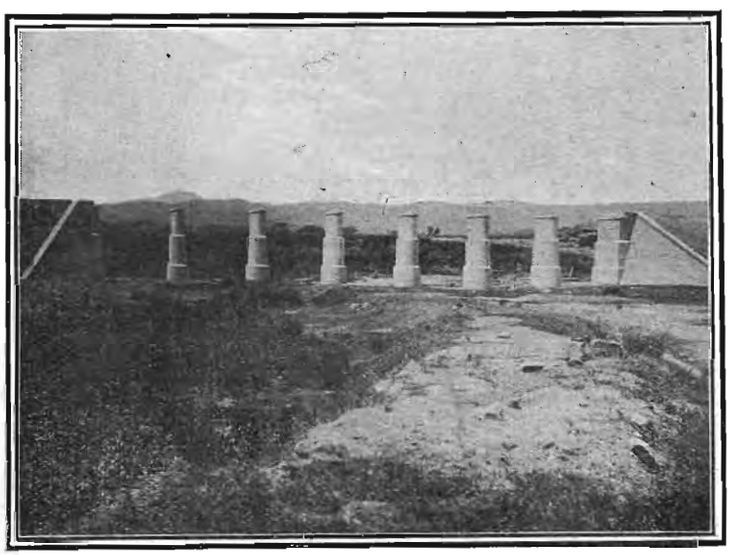
Two tunnels have been completed, one 800 feet long and the other 200 feet, while eight others were fairly under way when work was stopped. These include two, twenty-five miles from Ichang, each of about 1,000 feet. The longest tunnel is 6,200 feet long and is about fifty miles from Ichang.

Work was started on this tunnel in November 1910 with five shafts and a distance of 1,500 feet had been driven when the famous Imperial Edict which caused the cessation of the work, was issued.

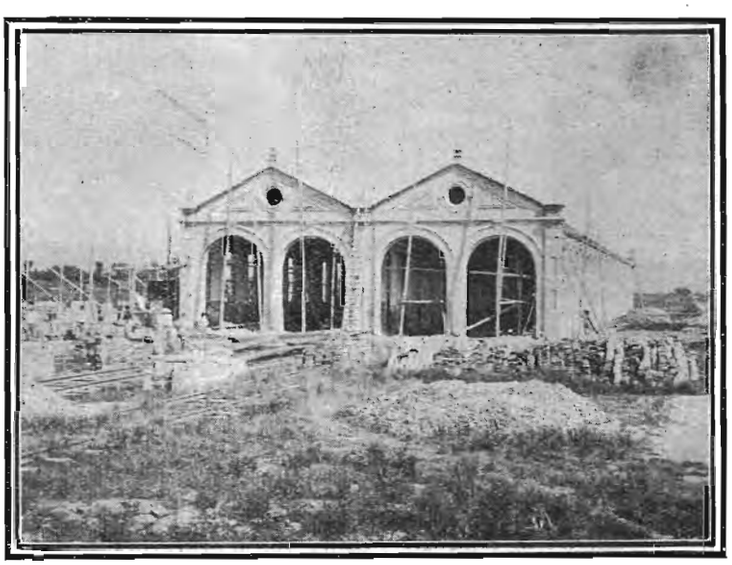
The ruling grade of the line is one in 40, which is very good for such country. The rails are of 85-lb. weight, 13 sleepers to the rail.

The actual work accomplished and begun on the Ichang-Kweichoufu section may be summarized as follows:—

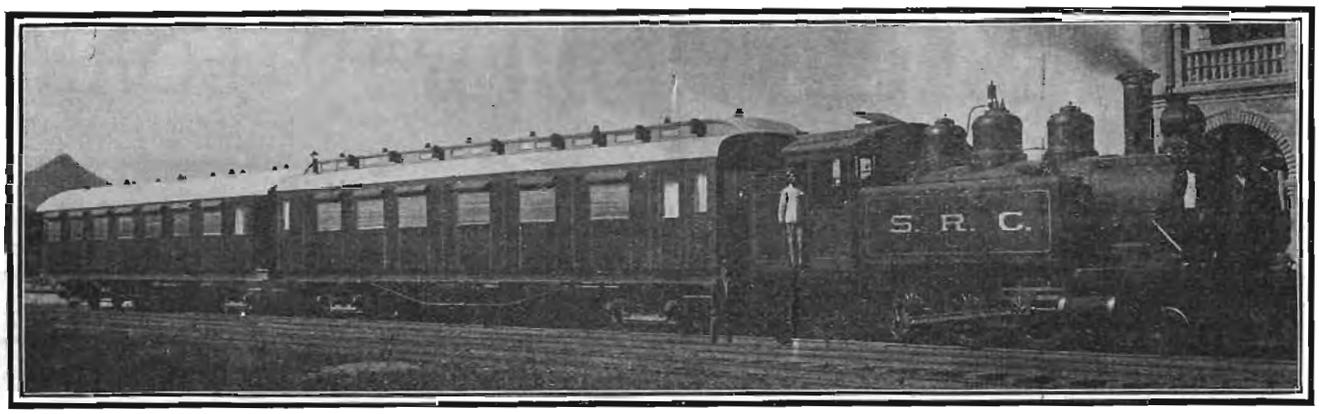
Bunding wharf finished.
Three goods godowns erected.
Earth works at wharf and station finished.
Double track laid from wharf to station.



SZECHUAN RAILWAY—SEVEN SPAN BRIDGE NEAR ICHANG



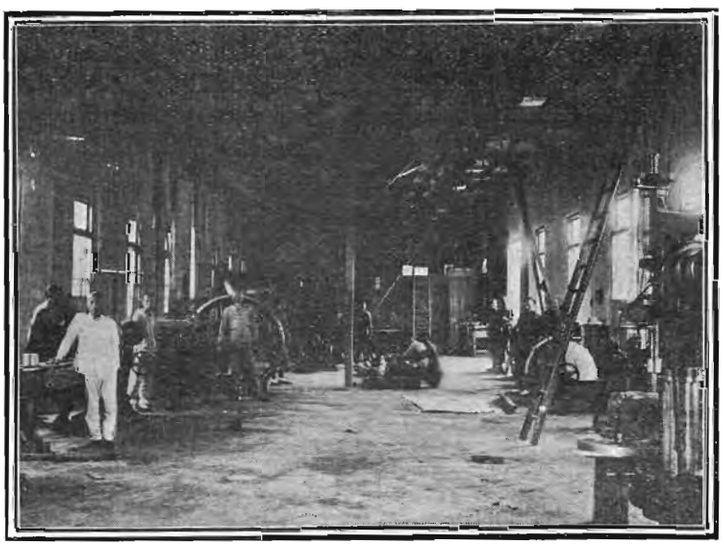
SZECHUAN RAILWAY—LOCOMOTIVE SHEDS



SZECHUAN RAILWAY COMPANY LOCOMOTIVE AND CARS

Ichang station finished.
Four stations along line finished.
Two engine sheds for 12 locomotives finished.
Water tower finished.
Machine shops finished.
Head Administration office finished.
Store Department and staff quarters finished.
Courses of creeks changed.
Numerous stone retaining walls finished.
Over fifty bridges finished.
Over sixty bridges started.

It may be mentioned that the machine shope are electrically driven and are fitted with American machinery. About 100 bridges were bought from the American Bridge Company. A good many orders for this line, however, went to British manufacturers.



SZECHUAN RAILWAY—TEMPORARY WORKSHOP AT ICHANG

ROLLING STOCK.

3 Baldwin shunting engines.
1 first class private car.
2 2nd class passenger cars.
4 3rd class passenger cars.
50 high side freight cars.
30 steel ballast cars (German)
20 flat cars (German).

The passenger cars were bought from the Government Railways of North China.

It was reported in November that it had been arranged that the Central Government should build the railway and that they should repay Tls. 10,000,000 to the Szechuan people, Tls. 200,000 to be paid when the work of construction is restarted early this year.

THE SALT GABELLE

REGULATIONS REGARDING AUDIT

The Government has issued regulations governing the reorganization of the Salt Gabelle. It would appear that these regulations were issued without any reference to the bankers, and that they are not deemed satisfactory by the Diplomatic Corps. Admiral Tsai Ting-kan has been appointed Inspector-General of the Gabelle and Mr. J. F. Oiesen has accepted the post of vice-Director.

The new regulations are as follow:—

I.—GENERAL.

1.—The present regulations govern the receipts and payments for the Salt Gabelle of China, the amount of salt consumed, the salt offices outside Peking, and their branches.

2.—On account of the importance of salt affairs and the complicated nature of salt accounts, the Ministry of Finance has established a Department of Audit and Report of the Salt Gabelle, in the Ministry, and its branches in the provinces, in order that the Salt accounts may be properly audited. Foreigners will also be engaged to assist the department.

II.—NUMBER OF OFFICIALS.

3.—There shall be a Director appointed by the Minister of Finance, a vice-Director, who should be a foreigner employed by the Minister, and a number of auditors, who shall not exceed ten in number.

4.—In the provinces, the branch department shall have one Chinese Director and one foreign vice-Director, and the rest of the employes shall, according to the circumstances, be fixed by the department with the approval of the Bureau of the Salt Gabelle, and the Minister of Finance.

III.—THE AUTHORITY.

5.—The said Department shall be under the control of the Bureau of the Salt Gabelle, and the branches in the provinces under the said department, and the Chief of the Bureau of the Salt Gabelle shall have authority over them all.

6.—The affairs of the said department shall be audited by the Bureau of the Salt Gabelle, and the branches in the provinces by the said department. But all shall be done under the supervision of the Ministry of Finance.

7.—The production, transportation and other administrative affairs in connection with the Salt Gabelle are not under the control of the said department and its branches in the provinces. But the salt certificates, which are in connection with the receipts, shall not be considered valid unless signed or sealed by the officers of the said department or its branches.

IV.—THE DUTIES.

8.—With regard to the receipts of the salt revenue, the branch offices are responsible for their safe-keeping, and they shall be from time to time remitted to the Government treasury, with a report to the Salt Commissioner and the said department for auditing purposes. With regard to payments they shall be submitted by the Chief of the Salt Gabelle to the said department, which after signing the documents will re-submit them to the Minister of Finance for investigation.

9.—At the beginning of a new year the branches in the provinces shall draw up an estimate with detailed explanations and send it through the Salt Commissioner to the Ministry of Finance for investigation, and accounts shall also be reported in the same manner.

10.—Besides the above estimates and accounts, a similar method of rendering accounts shall be copied from the Customs Service, i.e., every three months, returns shall be rendered to the Salt Commissioner at the nearest place and to the said department, for investigation.

11.—The forms used in recording the estimates, accounts, etc., for the branches shall be fixed by the said department, submitted to the Chief of the Salt Gabelle and the Minister of Finance, for approval, and then be sent to the branches for printing, etc.

12.—The estimates, accounts, etc., received from the provinces shall be summarised by the said department who will then submit the same to the Minister of Finance for investigation.

13.—If the said department or its provincial branches should desire to make any investigation in the accounts, the Chief of the Salt Gabelle or the Chief of the Salt Department may be consulted, whether the books be investigated or a delegate be sent.

V.—OBSERVATION.

14.—These Regulations shall take effect from the date of promulgation.

THE BELGIAN RAILWAY LOAN

FULL TEXT OF THE AGREEMENT

A loan agreement was recently signed for the extension of the Kaifong-Honan line, but so far no certainty exists that the work will be carried on as at first contemplated. This line, with its extension to Lanchow, the capital of Kansu and the eventual march westwards to the Russian frontiers is the most important line in China, and it is inconceivable that its control by a practically unknown group of financiers will be permitted without a protest from the nations who have large interests in the country. Already murmurings are in the air, and it is not unlikely that desires to have a revision of the agreement will shortly take definite shape. The money market of the world is so sensitive to the touch of certain hands, that difficulty may be experienced in floating the loan, and the probability is that, unless the syndicate now in control is able to defy the covetous, a rearrangement will be come to. So far the Chinese Government has appointed a Director General, and it is understood that he is making preparations to commence the survey. There is also a difficulty in that direction, for opposition to his appointment is already being raised, though not upon sound grounds. The opponents have a nominee of their own, and for that reason they feel justified in advocating the removal of Mr. S. C. Sze, who now holds the post.

The following is a translation of the agreement:—

PREAMBLE

The "Compagnie Générale de Chemins de Fer et de Tramways en Chine," concluded with the Chinese Government in the 29th Year of the Emperor Kouang-su, corresponding to the year 1903 of the occidental calendar, a loan contract for the construction of a railway from Kaifong to Honan-fu in the Province of Honan.

Article 23 of the contract stipulated:

"If the Company of the Railways and Tramways in China finishes, in good condition, the work of the railway from Kaifong-fu to Honan-fu, strictly in accordance with all the clauses of the present contract, in this case and if the Chinese Government decides to extend the railway from Honan-fu to Sian-fu, the Director General of the Imperial Chinese Railways obligates himself to agree to a preference and to give an option for the loan required for the enterprise to the Company, conformably to the clauses and conditions of the present contract.

It is well understood that if the Chinese Government is able to provide the necessary capital for the construction of the extension from its own resources or with funds raised by the subscription of its own nationals, the Company may not benefit by this Article."

The Chinese Government, having decided without further delay upon the construction of a principal transversal line of which the Pienlo and Lotung railways form the central sections, recognizing that the Company has completed in good condition the construction of the railway from Kaifong-fu to Honan-fu, taking into consideration that certain clauses of the aforementioned contract of 1903 offer serious difficulties, notably the clause admitting the foreign companies to a participation in the benefits,

Desiring to unify in the best possible way the construction, the equipment and the operation of the proposed great transversal line, namely by the incorporation of the aforementioned contract of 1903 into a new contract:—

Has concluded with the General Company the present contract which has for its object the connection by rail of the city of Lanchow-fu with the sea, passing through Sian Fu, Tun Kwan, Honan-fu, Kaifong-fu, Koreite-fu, Suchow-fu, and the Government receives to itself all the rights and advantages arising from the development of this line in its entirety, although at the same time it grants to the General Company certain compensation for the abandonment of its rights previously required.

ARTICLES I.—CONTRACTING PARTIES.

This contract was made at Peking, September 24, 1912. (First Year of the Chinese Republic).

The contracting parties are:—

Monsieur the Minister of Communications, duly authorized, by the Presidential Order dated August 21, to negotiate in the name of the Government of the Chinese Republic of the first part, and "La Compagnie Générale de Chemins de Fer et le Tramways en Chine," domiciled at Brussels, represented by Mr. Robert de Vos, duly authorized, hereafter called "The Company," of the second part.

ARTICLE II.—THE AMOUNT OF THE LOAN

The Chinese Government authorizes the Company to issue a five per cent gold loan of two hundred and fifty million francs.

ARTICLE III.—DATE AND NAME OF THE LOAN

The loan will bear the date of the issue of the bonds: it will be called "Emprunt du Governement de la Republique Chinois" (Loan of the Government of the Chinese Republic) five per cent. gold, of 191.. (1912 or 1913, first or second year of the Chinese Republic) for the Railway of Lung-Tsing-U-Hai.

ARTICLE IV.—OBJECT OF THE LOAN

This loan is made exclusively to provide the necessary funds for the following purposes:—

1. The construction and equipment of a principal line which will connect Lanchow-fu, the capital of Kansuh, in the West, to a seaport to the North of the Yangtsze River, in the East, making use of the Pienlo and Lotung sections, and eventually the Tsing-Kiang-Pu railway branch, and passing through Sian-fu, the capital of Shensi, Tun Kwan, Honan-fu, Kaifong-fu, the capital of Honan, Kweite-fu and Suchow-fu, province of Kiangsu. The definite survey and the eastern terminus will be decided jointly by the Director General representing the Chinese Government and by the Company, who will be guided in their selection by the interests of the enterprise. It is understood that the construction of the equipment includes the purchase of the necessary property and of material, rolling stock and other, as well as the work of joining together the existing sections in such a way as to insure an early and fruitful operation of the whole line.

2. *Pienlo Section*

The redemption of the 41 million franc loan on the Kaifong-fu-Honan-fu (Pienlo) railway of November 12, 1903.

As soon as the redemption has been made the Kaifong-fu-Honan-fu (Pienlo) contracts will be cancelled and the Pienlo line, forming a section of the principal Lung-Tsing-U-Hai line, will be operated and managed in accordance with the clauses of the present contract.

The interests of the bondholders refusing to redeem their bonds and interest at 5% will be protected by a deposit in a foreign bank named by the Company of a sufficient amount deducted from the amount of the present loan in order to insure the payment of the coupons to July 1, 1915, and the redemption of the principal on that date.

In compensation to the Company for the abandonment of certain rights which it possesses by nature of the contract of 1903 as far as administration and control are concerned, especially the 5% of the profits of the operation of the Pienlo Railway, the Chinese Government agrees to include in the present contract the extension of the Pienlo Railway East to a seaport. The Company renounces the 20% of the profits of the Tungsi Section to which it was entitled by virtue of Article 23 of the contract of 1903: it gives up also the special rights of administration and control accorded it by the contract.

In exchange for this renunciation the Chinese Government includes in this contract the construction of the extension of the Tungsi line West to Lanchow-fu, province of Kansuh.

Lotung Section

The Chinese Government obligates itself to purchase, equip and put into operation the Lotung section, granted to the provincial company of Honan, so that the Company may at an opportune time take all necessary steps in order to prosecute without delay and hindrances the work outlined in this contract to the West.

The Tsing-Kiang-Pu Branch Line

This branch of about 20 kilometres to the old bed of the Yellow River belongs to the Chinese Government which agrees that if the line from Suchow-fu to the terminus is so run so that this branch will be included it may be used by the contractors subject to the approval of the Engineer-in-Chief.

The cost of this undertaking will be taken from the amount of the loan.

3. To the management of the terminus port.

4. To the payment of the intercalary interests due on the loan as well as the operation expenses during the period of construction, the time of which is estimated at 5 years reckoned from the beginning of the date of the completion of the preliminary studies.

ARTICLE V.—INTEREST

The interest on the loan will be at the rate of 5% per annum upon the par value and it will be paid semi-annually by the Government of China to the bondholders: it will be calculated from the date on which the loan will be placed on the market and paid under the conditions hereinafter stated.

ARTICLE VI.—THE LIFE OF THE LOAN AND REPAYMENT

The life of the loan will be forty years. The repayment of the capital will commence ten years after the issue of the loan to the public.

Under the reserve of the right of repayment before maturity as provided for hereinafter the repayment will be paid in annual amounts in accordance with the tables of amortization annexed to the present contract.

The amounts necessary for the annual amortization will be paid to the Company in equal semi-annual payments, under conditions hereinafter stated.

After ten years from the date of the loan the Chinese Government will have the right to redeem in whole or in part the amount of the loan not yet redeemed by paying a premium of 2½% upon the par value of the bonds, in case of redemption before the 17th year of those bonds which by virtue of the table annexed to this contract the redemption would not be obligatory. Each time the Chinese Government wishes to make an extraordinary redemption, it must give six months previous notice in writing to the Company.

The extraordinary redemptions will be made by supplementary drawings (lottery) which will take place at the same time as the ordinary drawings, in accordance with the provision of the prospectus of the loan.

The redeemed bonds and interest coupons will be received and cancelled by the Company when they shall have been presented for payment: the Company will transmit them in good order to the Minister of China accredited to the countries where the payment has been made.

The Company will pay to the Chinese Government the total amount of every bond or interest coupon which shall not have been presented for payment in thirty years from the date on which they were redeemable or payable.

When the loan shall have been wholly redeemed the present contract becomes immediately null and void.

ARTICLE VII.—SERVICE OF THE LOAN

The Chinese Government undertakes for the present, the formal engagement and without reserve of paying fully and exactly the interest and to repay the capital of the loan conformably with the table annexed to the present contract. During the construction the interest will be paid from the funds realized from the proceeds of the loan.

The Chinese Government will raise the funds necessary for the service of the interest after the completion of construction and for the repayments from the receipts of the railroad: in case of insufficiency from the general revenues and at their default from the surplus not utilized in accordance with Article XIII.

The receipts of the railway shall be deposited promptly in a bank designated by common consent of the Chinese Government and the Company. This bank will deduct from these deposits for conversion into gold in the best interests of the Chinese Government the total amount necessary for the service of the loan for the two following semi-annual payments. This conversion will be made in such a way as to insure a supply of gold necessary for the service at least fourteen days before the day of maturity.

The half yearly payments due for interest and reimbursements will be deposited by the Company fourteen days before the day of maturity fixed by virtue of the preceding paragraph.

These deposits will be made by the Minister of Communications in the Banks designated by the Company in "sycee" used in the port where the payment takes place or in National Money (when it will be in circulation) and should be of a sufficient sum total to convert these payments into gold in Europe.

Exchange

The exchange for these payments will be fixed with the Company and the Banks designated by it the same day the deposit in silver is made.

Nevertheless, the Chinese Government will have the power to fix the exchange rate for the whole amount within the six months preceding the date on which the payment should be effected.

If in the future, a Bank of the State of China establishes a branch in Europe and not simply a correspondent or foreign agent, this Bank of the State will share to the amount of 50% of the service of the transfer of the funds with the banks designated by the Company.

Expenses-Charges

To cover the expenses occasioned by the payment of the interest and reimbursement of the principal of the loan the Company will receive from the Chinese Government a commission of a quarter per cent. on the payments.

Guarantees

The payment of the interest and repayment of the capital of the present loan are guaranteed by the Chinese Government and by a special guarantee on the Lung-Tsing-U-Hai Railroad.

This special guarantee constitutes a first lien on the Road itself, the permanent way, the rolling stock, the out houses and the products. It is accepted by the Company in the name of the bondholders.

If the Chinese Government is in default for the payment on the date fixed for all or a part of the semi-annual interest and repayment the Company will have full powers to exercise all the rights of action which accrue to it from the special guarantee.

ARTICLE VIII.—PRICE OF THE LOAN

The price paid by the Company to the Chinese Government for the bonds will be the price of issue to the public on the Brussels Exchange less six per cent. of their nominal value.

The Company will defray the expenses incident to the issue and sale of this loan, such as "syndicat de garentie," commission and brokerage, cost of telegrams, and of correspondence, printing and engraving of the prospectus and of the bonds, stamp duty and taxes. The Director General or the Ministers of China in the country where the issue will have taken place, will be advised beforehand of the price of the issue of the loan.

ARTICLE IX.—ISSUE

The Company is authorized to issue immediately Gold Bonds representing the total amount of the loan. Until issue the bonds will be deposited in banks designated by common agreement.

The Company is authorized to withdraw the bonds from the bank depositories with a view to the delivery to the subscribers in due time, conformably to the prospectus of the loan.

The nominal amount of the bonds will be fixed by the Company, which may make the bonds of different values.

The Company will fix the form of the bonds, the language in which they will be drawn up and the money in which their value will be expressed, conformably to the usage of the country in which the issues will be made. They will notify in advance the Director General or the Minister of China in the countries where issued.

The bonds will bear the fac-simile signature and the official seal of the Director General in order to dispense with the original signature.

Before the issue of the bonds, the Ministers of China accredited to the countries where the issues are made will affix to each document their official seal and the fac-simile of their signatures as a proof that the issue and the sale of these bonds are authorized by the Chinese Government and made in its name and for its account.

These bonds will be countersigned by the agent of the Company in the country where the issue takes place.

All the details necessary for the prospectus, or relating to the interest and to the redemption of the capital of the loan which may not be explicitly fixed by the present loan will be regulated by the Company after having consulted the Ministers of China accredited in the countries where the issue will be made.

The Company is authorized to publish the prospectus of the loan as soon as possible after the signing of the present contract.

The Chinese Government will give instructions to its representatives accredited to the conntries where the issue will be made, for them to sign the Prospectus of the loan and for them to give their assistance to the Company in all questions which may arise.

This loan of two hundred and fifty million francs will be issued to the public in one or in several issues, as soon as possible after the signature of the present contract. The first series of one hundred million francs or less will be issued to the public within twelve months from the date of the signing of the present contract. The rate of issue of the subsequent series which will not be less than fifty million francs, will be fixed by common arrangement by the Company and the Chinese Government in such a way that the work on the material foreseen by the present contract will suffer no delay.

The subscription list will be opened by the Company in Europe and in China in accordance with the following conditions: preference will be given to the subscription of the Chinese Government on the condition that this subscription list may be turned over to the Company at least four days before the publication of the prospectus.

The Company will notify the Chinese Government seven days before the publication of the Prospectus.

If before the publication of the Prospectus for the issue of the loan, a political or financial crisis takes place which would effect the market and the price of Chinese securities already floated to the point of making impossible in the judgment of the two contracting parties, the issue of the present loan, the Company will be granted a reasonable delay for the execution of the present contract.

If the loan has not been issued during the delay the length of which will be fixed by common agreement, the present contract will become null

and void. In this case, the advances which may have been made by the Company by virtue of this contract will be repaid immediately by the Chinese Government with current interest but without any other compensation or remuneration whatsoever.

ARTICLE X.—LOST BONDS.

If any of the bonds issued for the present loan are lost or stolen, the Company will so notify the Minister of Communications as well as the Minister of China accredited to the country where these bonds have been issued.

The latter will authorize the Company to publish notice in the papers that payment on these lost or stolen bonds has been stopped, and to take all measures which may be necessary in the premises in accordance with the laws and customs of the country.

If a bond has been destroyed, or if the bond lost, or stolen has not been found within the time fixed by the Company, the Minister of China accredited to this country shall affix his seal to a duplicate bond, of the same nominal value, and shall deliver it to the Company in its capacity as representative of the lost, stolen or destroyed document. The Company will defray all the expenses on behalf of the owner of the instrument.

ARTICLE XI.—EXEMPTION FROM TAXATION.

All the debts, all the coupons, and all the payments made or received in connection with the service of the present loan shall be free from all impositions and taxes on the part of the Chinese Government during the period of the loan.

ARTICLE XII.—THE TRUSTEE COMPANY

The Company shall be able to act as Trustee for the holders of the third part (les porteurs des tiers) of the present loan.

It will have the power to represent them and it will have the power, likewise, to act in their name in all the negotiations which shall become necessary with the Chinese Government or in any discussion concerning the present loan.

ARTICLE XIII.—PAYMENT OF THE PROCEEDS OF THE LOAN, LIABILITY OF THE RAILWAY

The proceeds of the loan shall be paid to the credit of an account known as "The Lung-Tsing-U-Hai Railway," which shall be opened by the Company or by the Banks designated by it, in Europe (Gold Account in Europe).

The proceeds of the loan shall be placed to the credit of this account in successive payments, in conformity with the conditions accorded to the subscribers to the loan.

The Company shall be responsible for these places of deposit. The credit balance of this account shall bear interest payable to the Chinese Government. The rate of interest shall be three per cent. per annum.

After deducting the payments and the reserves that must be made with respect to the proceeds of the loan, in conformity with the present contract, the Company shall hold the credit balance, plus the current interest, at the disposition of the Director General.

A sufficient sum shall be left in Europe for all payments for materials and the salaries of the staff.

The Director General shall have the power to transfer to China, at his will, the loan funds after having come to a previous understanding with the Company on the subject.

Not more than three millions of francs may be thus transferred in any one week without the consent of the Company.

These transfers shall be made through the Company and the banks designated by it and their total amount shall be deposited to the credit of the Lung-Tsing-U-Hai Railway (Gold Account in China) at the liability of the Company.

In conformity with a table of estimates drawn up by the Engineer-in-Chief of the expenses to be met in China during the month of.....or the following months, the Director General shall determine the total amount necessary to be set aside from the gold account for conversion into Chinese silver.

This conversion shall be made by the Director General and through the banks designated by the Company. It may not be for more than the sums required for one month unless the Company or the Banks designated by it consent thereto.

The proceeds of the conversion shall be deposited in current account to the credit of the Lung-Tsing-U-Hai Railway (Silver Account in China) in the banks designated by mutual agreement:—they shall bear interest at the rate fixed by rules in force for this category of current accounts.

All drafts on the banks designated as depositories of the funds of the Lung-Tsing-U-Hai Railway in China shall be signed by the Director General and the Engineer-in-Chief conjointly.

The amount of these drafts shall be handed to an agent designated by the Director General against a receipt given by the agent and at the responsibility of the Director General. This agent shall not yield up these funds except on a requisition signed conjointly by the Director General nd the Engineer -in-Chief.

The Director General and the Engineer-in-Chief shall have absolute control over all the expenditures and receipts of the railway.

During the period of the loan the accounts of the railway shall be kept in Chinese and in French according to modern methods.

The Railways Administration shall publish annually, after the closing of its fiscal year (la cloture de son exercise), a report in Chinese and in French, showing the receipts and expenditures connected with the management of the railway and the public shall have access to this report on request.

ARTICLE XIV.—EVENTUAL DEFICITS AND SURPLUSES

If the proceeds of this loan increased by the interest thereon are not sufficient for the finishing and equipment of the railway, the deficiency will be made up in the following manner:

In the first place the funds which the Chinese Government may have at its disposal will be used in such a manner as to permit the continuation without interruption of the work of construction, the funds thus used will be considered as being a part of the capital of the railway, but the dividends to which the capital thus furnished shall be entitled shall in no wise impair the guarantee which insures the payment of the interest and the principal of the capital forming the subject of the present loan.

If, after this, funds are lacking the Company shall issue a new series of the loan, subject to the conditions of the present contract, for the amount necessary to entirely complete the line and put it into definite operation.

This new series shall enjoy the same guarantees and will be placed, in all respects, on the same footing as the former series of the present loan amounting to 250,000,000 francs.

If, after the completion of the railway, there remains to the credit of the account of the Lung-Tsing-U-Hai railway, a surplus of funds not utilized, this surplus shall be placed in a bank in China that shall be designated jointly by the Director General and the Company.

This surplus shall constitute a reserve for the payments for which the Chinese Government shall be liable by reason of the present contract.

ARTICLE XV.—ADVANCES.

If, in order the accelerate the carrying out of the present contract, the Chinese Government and the Company find that funds are necessary in advance of the issuance of the loan the Company undertake to make the necessary advance at the rate of six per cent. interest per annum. In this case the Company will be empowered to withdraw from the bank in which they are deposited Bonds to an amount equal to one and half times the sum advanced.

These advances will constitute first charges, for their principal and interest, on the proceeds of the loan.

ARTICLE XVI.—CONSTRUCTION

The preliminary investigations for the construction of the line will be commenced within the shortest possible time.

The length of the line will be definitely fixed after these preliminary investigations are concluded.

Work on the railway will be commenced within six months after the signing of this contract. It is estimated that this work will continue for the space of five years after the conclusion of the investigations.

The Chinese Government shall name the Director General of the Railway. This officer will have his permanent residence within the immediate neighborhood of the work of construction. He shall have full power to act on behalf and on account of the Chinese Government within the limits of this contract. The Engineer-in-Chief will be subject to his orders. The emoluments of the Director General will be fixed by the Chinese Government acting with the Company and will be a charge upon the railway.

In a general way and without prejudice to the engagements entered into by virtue of Art. IV pars. 9 and 10 the Chinese Government will provide freely and without encumbrance all the land needed for the construction of the railway and its attached works. It will, therefore, take all measures and will assume the making of all payments and the defraying of all charges whatsoever necessary to assure the passage of the line through public property (governmental or provincial) or private property, in the villages and cities as well as in the country. All the sums required for this purpose and those required for the purposes named in Art. IV. pars. 9 and 10 by the Chinese Government will be placed in the hands of the Government and will be deducted from the proceeds of the loan. However the entire amount to be paid to the Chinese Government under this heading shall be fixed by the Director General and the Company.

The work of constructing the railway will be performed under the supreme direction of the Director General.

The Director General and the Company shall act together and conscientiously choose an Engineer-in-Chief who shall be either Belgian or French, experienced and honest.

The Engineer-in-Chief will conclude the making of the studies, plans, tracings and estimates of the line, will direct the execution of the work thereon, and will have charge of the materials, tools, and the property necessary for the regular prosecution of the work. All these operations, must, however, be submitted in the first place to the Director General for his approval.

The Director General will fix the salary of the Engineer after having come to an agreement with the Company.

The Engineer-in-Chief will draw up a table of organization of the European staff necessary for the construction and will submit it to the Director General for his approbation. This force comprising the Chief of Service, the Chief of Section, the Chief of the Accounting Bureau, etc., shall be engaged by the Company which shall place it under the orders of the Engineer-in-Chief.

In all that concerns the Chinese staff, technical or other, the Director General shall have full power of appointment: he will place it under the orders of the Engineer-in-Chief. No Chinese employe or European can engage without the assent of the Director General.

It is well understood that Chinese subjects having made special studies or having acquired sufficient practical knowledge may be recommended by the Director General to the Chief Engineer who will employ them by the same titles as European employees, but it will be necessary to send them previously to the Chief Engineer accompanied by a technical delegate who will examine their capabilities.

The Director General can revoke appointments for a gross fault in the non technical personnel: in that which concerns the technical personnel and all the European personnel the Director General may demand the recall from the Chief Engineer who shall acquiesce in this demand if the indicated motive is sufficiently recognized.

The European personnel should have in a general manner the greatest regard for the Director General and his special representatives. They should respect the local authorities and not interfere in the affairs of the country. They should equally respect the Chinese habits and customs, in order to live with a good understanding with the inhabitants.

The intention of the contracting parties in inserting the preceding stipulations is to safeguard the prestige of the Director General and assure the regular prosecution of the work.

The Director General reserves to himself, also the right, in agreement with the Company, to delegate for the works one or more special representatives carrying full power. The salary of these representatives to be paid by the Railway.

Supplies

The Company will be charged during all the time of construction with the supplying of everything necessary for the construction and equipment of the line, and for the needs of its operation except Chinese supplies which can be procured on conditions of equal price and quality.

The Company will apply for competition in order to obtain the most advantageous conditions notably those relating to quality and price, but preference will be given to Belgian and French supplies.

These orders for contracts for work should be issued by the Chief Engineer and submitted for the approval of the Director General. The accounts of moneys paid for supplies of material and expenses of every nature paid in Europe should be sent every three months with a statement of accounts and supporting vouchers to the Director General for approval.

Exemption from Taxes

All orders made by the Company in China as well as those abroad will be exempt from all right of taxation, import, and likin on the entry or on their passage through Chinese territory. Nevertheless this stipulation does not impair the right of the Chinese Government eventually to impose on these orders such future taxes as shall be paid on orders destined for the construction and equipment of all other railways of the countries whatsoever.

Expenses

The Company will not have to meet any expense relative to the "construction de ses deniers" but it is well understood that the Director General will pay the Bureau at Brussels only that which concerns the expenses necessary for study, orders, receipts of materials and engaging of personnel. These expenses can be fixed by common agreement at a lump sum payable annually to the Company. Consequently the expenses of representation of the administration, indemnities and others will remain in charge of the Company.

Small Branch Lines

The present contract will apply if the Company will consent to the construction of small branches from the Lung-Tsing-U-Hai Line that will be necessary in order to assure traffic and establish useful relations.

ARTICLE XVII.—WORKING DURING CONSTRUCTION

In proportion to the completion of the different sections of the line the Director General and the Chief Engineer will take, by mutual agreement, the necessary measures in view of their operation.

Future Extension.

If, in the future, the Chinese Government considers it desirable to construct extensions of the Lung-Tsing-U-Hai Railway to better serve the interests of the country, notably to prolong the line to Suchow, via Kan-cheou, Province of Kansuh, it engages itself to extend the preference with the Company and give it the option on the relative loans for these enterprises on the same conditions as those which will be offered by other banks or foreign societies without this stipulation weakening the right of the Chinese Government to execute these works of extension by means of funds raised from Chinese sources.

ARTICLE XIX.—FINAL OPERATION

Personnel and Control

The Chinese Government will be in sole charge of the operation and of the direction of the railway.

It will designate for it the Director General who will be assisted by the Engineer-in-Chief.

The Engineer-in-Chief will be under the orders of the Director General. The Director General and the Company will select conscientiously and by common accord the Engineer-in-Chief who will be of Belgian or French nationality, experienced and honest.

For the dismissal of the Engineer-in-Chief a previous understanding must have been reached by the Director General and the Company.

The Chief of General Accounts, who will be of Belgian or French nationality, will fill at the same time (du bon Emploi) the position of Auditor. He will be named by the Director General and confirmed by the Company. He will sign jointly with the representative of the Director General all the checks drawn and responsible documents of all kinds.

Each time that it becomes necessary to appoint technical employees for the railway, or to define their functions or even to remove them, the Director General must consult with the Engineer-in-Chief and act in accord with him. In case of disagreement between the Engineer-in-Chief and the Director General the difference will be submitted to the Minister of Communications who as the last resort will decide the question.

Supplies

From the beginning of the operation of the entire line the Director General will place orders for the supplies according to the best interests of the enterprise, but conditions of price and quality being equal, preference will be given to Belgian and French firms. In the case where it is a question of making one or more foreign firms agents to purchase supplies for the operation of the line, the Company, under equal conditions, will have the preference for one-third.

ARTICLE XX.—RIGHT OF DELEGATION, SUBSTITUTION AND TRANSFER

The Company may designate one or more banks in China or elsewhere to execute in its stead and place all or a part of the financial obligations with which it is charged by virtue of this contract.

The Company, shall have the rights, under reserve, of all the engagements it has undertaken by this contract, of transferring or delegating all or a part of its rights, powers or advantages, to another Company or group or to agents or administrators, with power of substitution in whole or in part.

It is well understood that the Companies or group having been delegated or substituted by application of the preceding paragraph must be of Belgian Nationality and that these transfers of rights will be subject to the approval of the Minister of Communications.

ARTICLE XXI.—ARBITRATION

In case of differences between the Company or its delegates and the Director General on the subject of the execution of the contract, the conflicts or differences will be settled by the decision of two arbitrators, one chosen by the Chinese Government and the other by the Company. In case of disagreement, the two arbitrators will name a third arbitrator whose decision shall be final.

ARTICLE XXII.—EXECUTORY FORMS

The present contract signed and sealed by the Minister of Communications and of Finance, shall be approved and sealed by the President of the Republic and ratified by the National Assembly, after which, and without delay, the Wai Chiao Pu will officially notify the Minister of Belgium at Peking.

This contract is executed in four copies each in French and Chinese. Two copies will be deposited with the Government of the Chinese Republic and two with the Company. In case of doubt or difference concerning the interpretation of the present contract, the French text will prevail.

Peking, the 24th day of September, 1912. (Year 1 of the Chinese Republic.)

L.S. THE MINISTER OF COMMUNICATIONS.

L.S. THE MINISTER OF FINANCE.

L.S. FOR LA COMPAGNIE GENERALE DE CHEMINS DE FER ET DE TRAMWAYS EN CHINE.

THE LOTUNG RAILWAY

HONANFU AND TUNGKUAN

It was early recognised that it was of the greatest importance that the Pienlo Railway should be extended from Honanfu to Tungkuan, and subsequently to Sianfu. Objection was taken to the provision of foreign capital and eventually the Honan-Tungkuan Railway Company took up the work of construction. In 1909 there were reports that the American Group, represented by Mr. Willard Straight, was going to finance the line, but the Chinese decided to find the funds themselves. The unfortunate result of the work being hampered by financial difficulties, which has, in the past so often attended purely Chinese undertakings, was also the fate of this enterprise.

The capital subscribed was frittered away without any tangible outcome in the shape of a railway. A loan of Tls. 5,000,000 from the Kungyi Bank was mooted and an agreement was actually signed, but the net result of operations so far has been that seventy miles of earthwork has been completed and rails laid for thirty miles.

The length of the railway when completed will be 160 miles. The standard gauge has been adopted. There is a prospect of a very fair carrying trade in local products, and, of course, when the line is extended to Sianfu and ultimately to Lanchowfu, the Lotung Railway will greatly benefit. The Government, designs to buy up this line in order to pledge the whole length of railway named in the Belgian Loan Agreement, as security for the loan.

The Executive Board of the Railway is as follows:—

President, LIU KUE
Vice-President, PENG YUN-PING
Consulting Engineer, JEME TIEN-YU
Chief Engineer, HSU WEN-CHOUNG
District Engineer, CHAO CHING
Assistant Engineers, LIU CHING, SHEN PEI-CHIA
Secretary, HSU YUNG-KWONG.

Sheng Kung-pao, the director general of the Imperial Chinese Railways, and Mr. Armand Rouffart, the representative of the Cie General de Chemins de Fer et de Tramways en Chine. The line was financed by the Belgian Group which has now arranged to finance the construction of the railway uniting Lanchowfu and Haichowfu, the Chinese Government borrowing 25,000,000 francs, or £1,000,000 sterling at 5 per cent.

The new Belgian Loan Agreement contemplates, in the first instance, a railway 1,700 Kilometres in length, uniting Lanchowfu, the capital of Kansu and Haichow, the proposed new port in Kansu. The fact that the Pienlo Railway is under Belgian influence and that the original concession gave the option of prolonging the line from Honanfu to Sianfu rendered it almost inevitable that the Belgian Group would secure the construction of the great East and West line of which the Pienlo Railway, as already stated, forms a link.

The standard gauge, 4 ft. 8½ inches, has been adopted. The track is single and its condition is described as good. The section between Kaifengfu and Chenchowfu, where a junction is made with the Peking-Hankow Railway is fairly level and there were few

LOTUNG RAILWAY—TRESTLE BRIDGE NEAR HONANFU

The longest bridge is 300 metres. A steel girder bridge about 1,500 feet in length spans the Lo-ho, an important tributary of the Hoang-ho.

The stations along this line are of an unpretentious character, being one-storeyed semi-foreign buildings.

The commercial possibilities of the line are good as it taps the western section of Honan, which is rich and productive, but the line will not reach anything like its full earning power until the completion of the extensions east and west. Honan coal is used on the line, which is obtained from mines along the Taokow-Chinghua Railway.

ROLLING STOCK

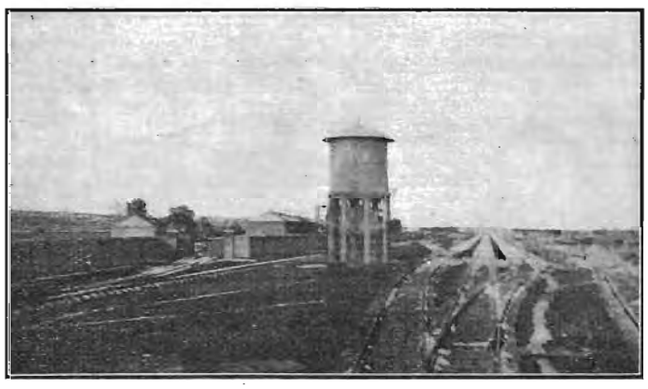
Locomotives: 10 compound and 5 small engines of Belgian make.
Passenger cars: 29.
Freight cars: 307.

AGRICULTURE IN WESTERN CHOSEN

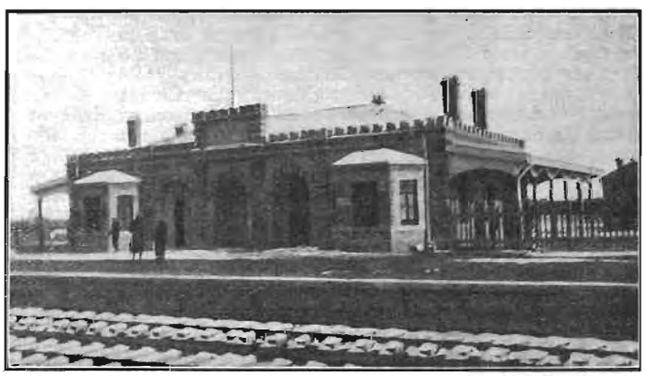
ACTIVITY OF ORIENTAL DEVELOPMENT COMPANY

A Chinnampo paper reports that the Oriental Development Company has purchased dry fields to the extent of 2,400 *chobu* in Taichon District, North Pyongan Province. Since last year the Company has directed its attention to agriculture in Western provinces and has been making investigations with a view to getting suitable lands. The recently purchased fields, it is stated, are to be converted into paddy farms, and official permission having been obtained, work will shortly be commenced at an estimated cost of 330,000 yen. In addition to these fields, cultivated lands to the total extent of over 1,000 *chobu* have been bought by the Company near Pyongyang. Further purchases are to be made, but the Chinnampo paper we quote adds that these purchases will be effected gradually lest they may causes a speculative rise in the price of lands.

The fields acquired by the above company, says the *Seoul Press*, are intended for leasing to tenants who can become proprietors after the lapse of a stated time on certain conditions and its activity in West Chosen as well as in Southern provinces will not in the least hinder the achievement of the agricultural policy of the Government-General as is apparently feared by some foreign critics. In other words, the company does not make these purchases for cornering or other speculative objects. Far from that, its principal object consists in improving hitherto more or less neglected arable lands in Chosen by the aid of irrigation and other expensive works and then apportioning them out to diligent and qualified farmers at moderate profits. It is to be hoped that the activity of the company will thus help the increase of peasant-proprietors as desired by Count Terauchi in his recent instructions to provincial Governors!



LOTUNG RAILWAY—RAILWAY YARDS AT HONANFU



LOTUNG RAILWAY—HONANFU STATION

THE PIENLO RAILWAY

KAIFENGFU AND HONANFU

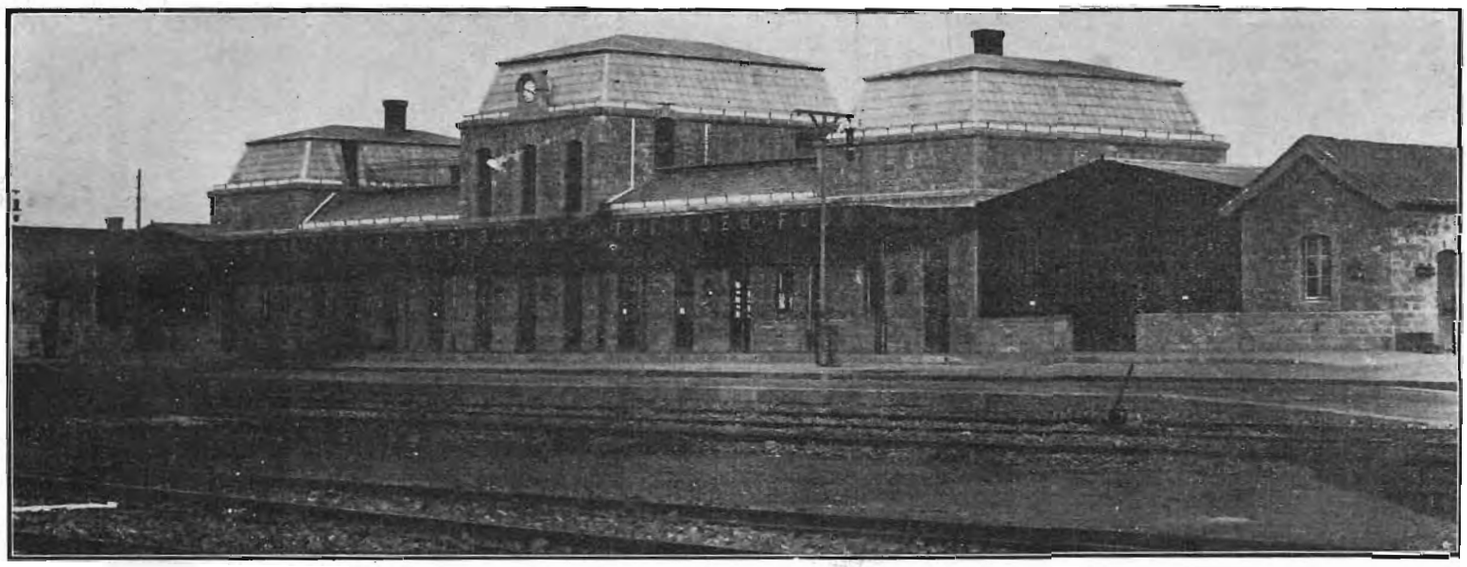
This line connects the important city of Kaifengfu, in Honan, and Honanfu and there links up with the Lotung Railway between Honanfu and Tungkuan. Some particulars in regard to the latter line are given in the preceding article. The Pienlo Railway was opened to traffic in 1908. It is 115 miles in length, but is really only one link in a comprehensive scheme to connect Kansu and the sea-board. The Pienlo is owned by the Chinese Government, but the administration is in the hands of French officials representing the Belgian Group. The contract for the construction of this line was signed in Shanghai, 1904, between H E.

cuttings. On the other hand considerable embankment was necessary to raise the roadbed above the surrounding country and to protect it from floods. West of Chenchowfu the loess hills are entered and thence to Honanfu there is a succession of cuttings and tunnels. Of the latter there are eleven between Szechui, a large market town not far from the Yellow River, and Heishikwan, some of them being 2,000 feet in length. While on the Kaifengfu-Chenchowfu section there is a danger of the road being entirely washed away in the event of the Yellow River dyke giving way, on the Chenchowfu-Kaifengfu section there is only a possibility of washouts in times of excessive rain.

In the 115 miles of line there are 403 bridges, 168 of metal and the remainder of masonry.

THE SHANSI OR CHENGTAI RAILWAY

CHENGTINGFU TO TAIYUANFU



SHANSI RAILWAY—STATION AT CHEU KIA TCHOUANG

On October 13, 1902 (14th day, 9th moon, 28th year of Kuang Su) the Director General of Railways, acting for the Chinese Government, signed a contract with the Russo-Chinese Bank for the construction of a railway between Cheng-Ting-Fu (a prefecture of Che-Li Province) and T'ai-Yuan-Fu (the capital of the Province of Shansi). Prior to this an agreement had been made between Fang, superintendent of the Lui-lin-Taiyuan Railway Co. (understood to be acting under authority of the Governor of Shansi) and M. Pokotilow, director of the Russo-Chinese Bank, for the construction of this line. The line including "official profits" was estimated to cost Tls. 6,800,000. The agreement provided that the company should borrow that amount from the Bank at 6 per cent. The contract of October, 1902 was signed by H.E. Sheng Hsuan-huai, acting under authority of an Imperial Decree, and Mr. C. R. Wehrung, one of the directors of the Bank. The amount of the loan was forty million francs and the rate of interest five per cent. It was provided that the Bank would endeavor to finish the work within a term of three years. Article V of the contract provided for the interdiction for 30 years, or while the loan was unredeemed, of the construction of another railway between Lui-lin and Taiyuanfu, that would be detrimental to the interests of the line.

The Russo-Chinese Bank transferred this concession to the "Société Française de Construction et d'Exploitation de Chemins de Fer en Chine," and in 1903 engineers were sent to China to build the first section.

The Engineer-in-Chief remained in Shanghai and arranged a preliminary draft contract, in which the gauge was not specified. The negotiations were lengthy because the Chinese Government desired to adopt the standard gauge, but as four-fifths of the line traversed mountainous districts and the remainder was a very tortuous route the French Society could not undertake to build a standard gauge at the proposed price of forty million francs.

The cost of building the line to standard gauge was estimated at 75 to 80 millions, and the earnings for many years would be inadequate to pay the interest on such a large sum.

The construction of a metre gauge line would necessitate a much less sum, and satisfy all the requirements of traffic over a period of 60 to 80 years.

So, finally, at the end of 1903, the Chinese Government accepted the metre gauge, and on July, 1904, the work commenced on the surveyed section up to kilometre 32, and the laying of the track was pushed forward with great activity.

Sketch of the Line

The preliminary reconnaisance was made before 1902, by engineers from a large construction firm of Paris. The starting point was about one hundred metres from the banks of the river Hou-Ta-Ho, at Louo-Liau, a village on the line of the Peking-Hankow Railway.

As the Hou-Ta-Ho often rises and causes great damage by floods, it was decided to start from Cheu-Kia-Tchoung a small village near the station named Kin-Han (abbreviation of Peking-Hankow) situated 15 kilometre to the south of Cheng-Ting-Fu and 277 kilometre from Peking.

The line proceeds westwards up to Cheo-Lang-Hien, kilometre 160, and then inclines towards the south, descending south-west to Tu-Tzeu-Hien (217 kilometre) and from there, north-west to T'ai Yuan-Fu, 243 kilometre.

From Cheu-Kia-Tchouang as far as kilometre 16, the line rises by easy gradients to the plain of Houe-Lou-Hien, arriving at the foot of the T'eou-Ts'iuen mountain (24 kilometre).

From this point it ascends to kilometre 30, with a grade of 18 to 19 millimetres per metre. From there, the line descends with an incline of 12 millimetres per metre for two kilometre so as to ascend and arrive at the first range of mountains, which it traverses through a tunnel of 150 metres to kilometre 34.

From kilometre 40 the grade is from 12 millimetres, crossing the Chin-Ho, (a tributary of Mien-Chouei) over a bridge of two trusses of 50 metres each. Finally, it joins the right bank of the Mien-Chouei and follows the conflux of the Hsi-Han-Ho and Mien Chouei, to where it crosses the branches of the Hsi Han River over two bridges of 50 and 60 metres.

Between these bridges it was necessary to place a metal truss of 10 metres, to allow the flood water to run from the two branches, and provide a road for the caravans and carts.

At Nan-Houng-K'eon (kilometre 47) the line leaves the right bank of the Min-Ho and continues towards Tsing-Hing-Hien kilometre 56. This section of the line is very difficult, rising in terraces with a grade of 18 to 21%, and crossing the neck by cuttings of 10 metres deep and 650 metres long, all of which could have been avoided had the inhabitants permitted the right of way by the valley.

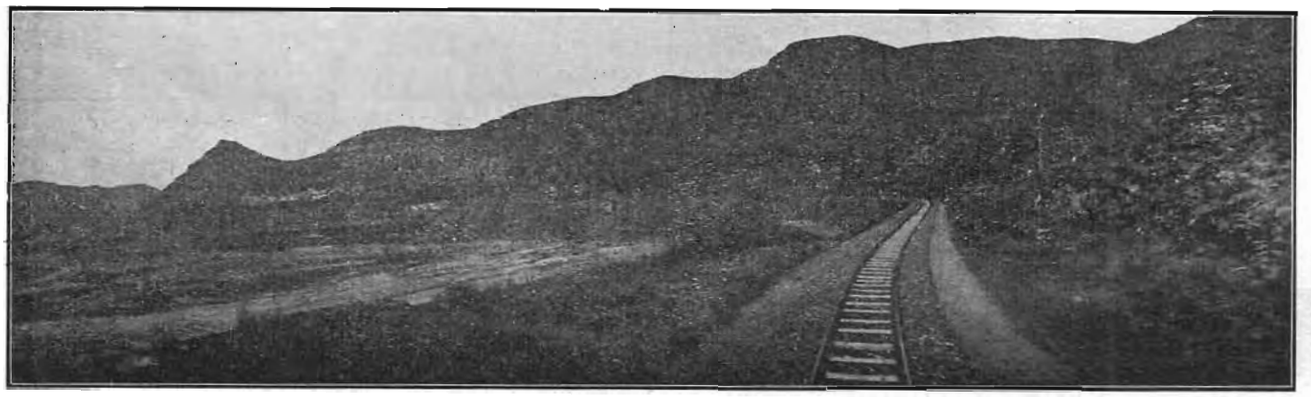
From kilometre 56 to kilometre 61 the line runs along the right bank of the river and passes over to the left bank by a metal bridge of 75 metres and then enters a curved tunnel 165 metres in length. From kilometre 74, the line again passes over to the right bank by a viaduct of 250 metres, comprising 3 trusses of 50 metres each, with arches of about 10 metres each, and 6 arches more of 10 metres. This point, the conflux of the two great rivers, is dry part of the year, but becomes active during the rainy season. One of the rivers—the Siao-Pe-Ho—takes its source from the north-west, near Ying-Ying. A survey was made from this point to Ping Y'an, but abandoned owing to the heavy grades and other engineering difficulties to be overcome. This valley is rich in anthracite and iron, and the Chinese work a large number of mines and furnaces here. Therefore to avoid the valley of Siao-Pei-Ho, the line follows the right bank of the Mien-Chouei, the other conflux of the river, a very difficult passage. By a series of tunnels, walls, and viaducts with a grade of 12 to 17%, the line ascends the banks of the river, which at this point have an elevation of 60 to 100 metres.

Between kilometre 75 and 90 the line follows the right bank. Here the mountain is pierced by a tunnel of 300 metres in length and the river is crossed by a bridge of 75 metres, together with a viaduct of 10 metres.

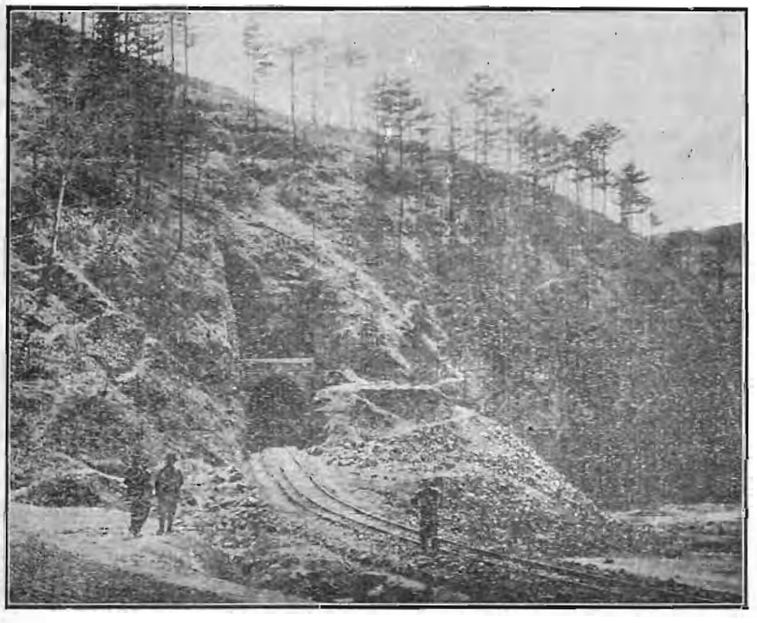
The Railway remains on this bank to kilometre 118, and crosses the river again by a metal bridge of 65 metres and two arches of two metres. One thus arrives at the center of the line (kilometre 121) near the point where it borders the Siao-Pei-Ho, and at kilometre 5 of the Sub-prefecture of Ping-Ting Chow the center of the anthracite mining district.

From kilometre 121 the railway is supported on the side of the right bank to kilometre 151, where the river is abandoned to enter a second valley, and arrives at the beginning of a neck (km. 155) of which the elevation is 1,076 metres, whence the line descends the terraces of loess over two or three easy grades to kilometre 231. From there two short sections

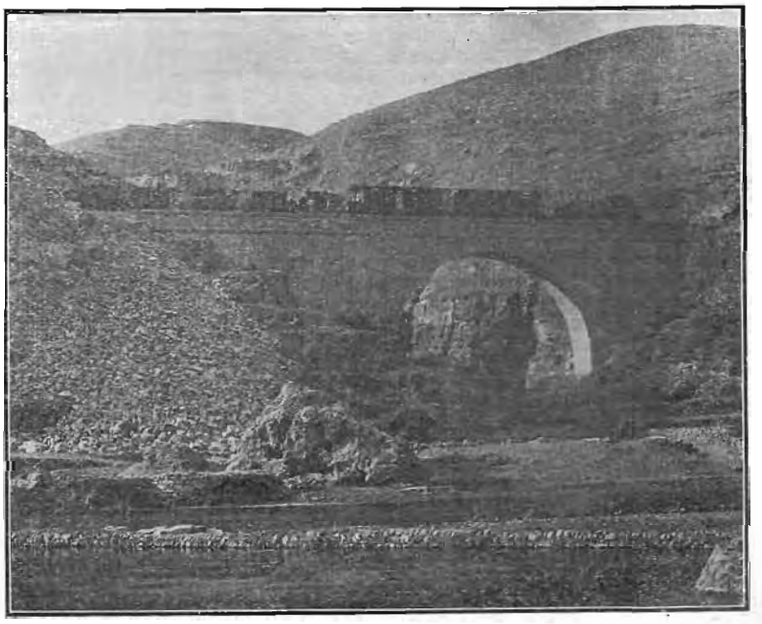
SHANSI RAILWAY—THE LINE SKIRTING THE RIVER



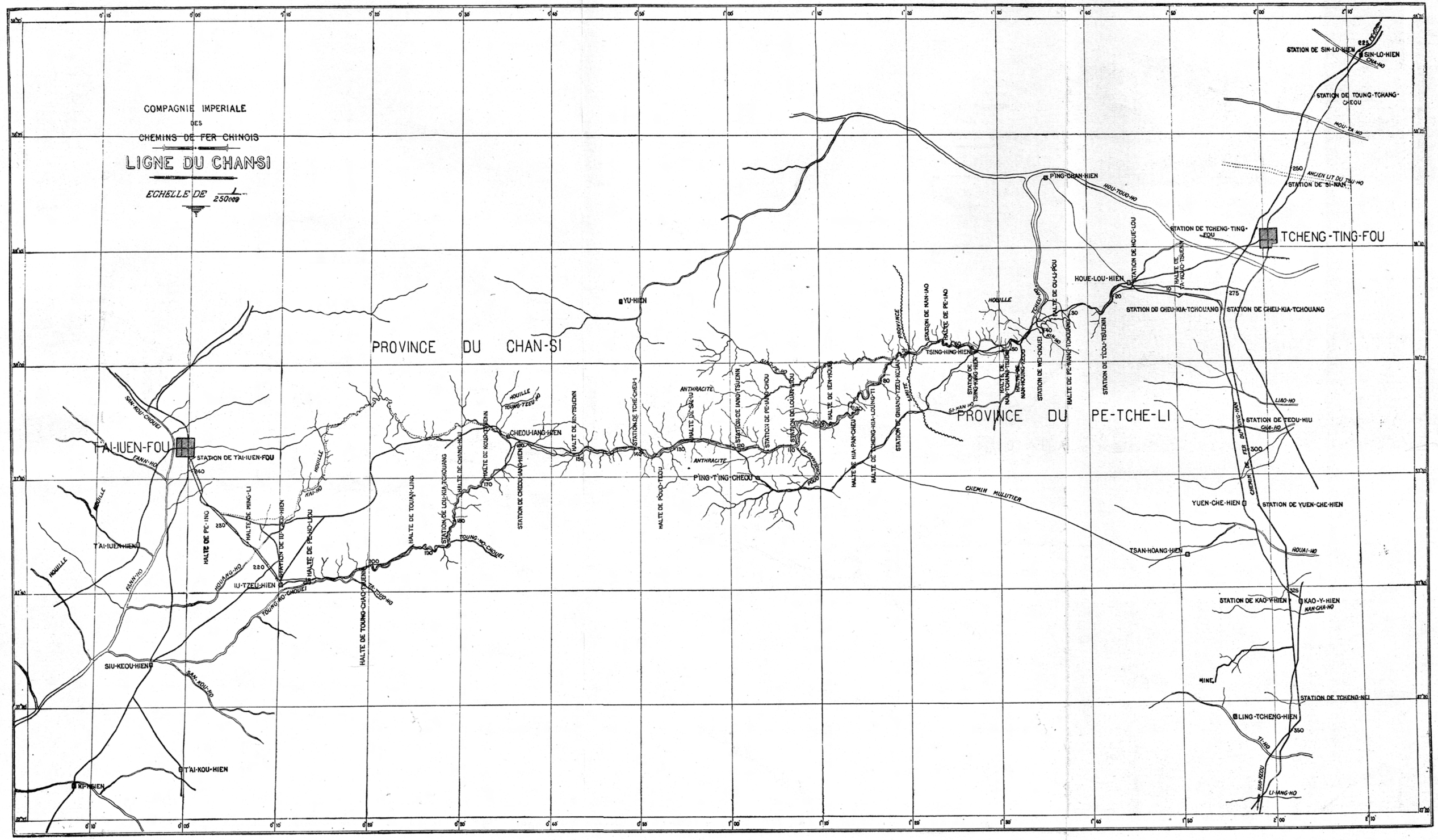
SHANSI RAILWAY—CHARACTER OF THE COUNTRY TRAVERSED



SHANSI RAILWAY—THE KM. 170 TUNNEL NEAR KOUO TSUENN



SHANSI RAILWAY—20 METRE ARCHWAY AT KM. 70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SIU-KEOU-HIEN
T'AI-KOU-HIEN
KI-HSIEN
HALTE DE PE-ING
HALTE DE MING-LI
STATION DE IU-TZEU-HIEN
HALTE DE PE-HO-LIOU
HALTE DE TOUNG-CHAO-TSUENN
HALTE DE TOUAN-LING
STATION DE LOU-KIA-TCHOUANG
HALTE DE CHANG-HOU
HALTE DE KOUO-TSUENN
STATION DE CHEOU-IANG-HIEN
CHEOU-IANG-HIEN
HALTE DE KIN-TSUENN
STATION DE TCHE-CHEU-I
HALTE DE POUO-TEOU
HALTE DE SIN-IU
STATION DE IANG-TSUENN
STATION DE PE-IANG-CHOU
STATION DE LOUAN-LIOU
HALTE DE IEN-HOUEI
HALTE DE HIA-PAN-CHEU
HALTE DE TCHENG-KIA-LOUNG-TI
STATION DE GNIANG-TZEU-KOUAN
P'ING-T'ING-CHEOU
TSING-HING-HIEN
STATION DE NAN-IAO
HALTE DE PE-IAO
STATION DE TSING-KING-HIEN
HALTE DE NAN-TCHANG-TSUENN
HALTE DE NAN-HOUNG-KEOU
STATION DE WEI-CHOUEI
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HOUE-LOU-HIEN
STATION DE HOUE-LOU
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YUEN-CHE-HIEN
STATION DE YUEN-CHE-HIEN
TSAN-HOANG-HIEN
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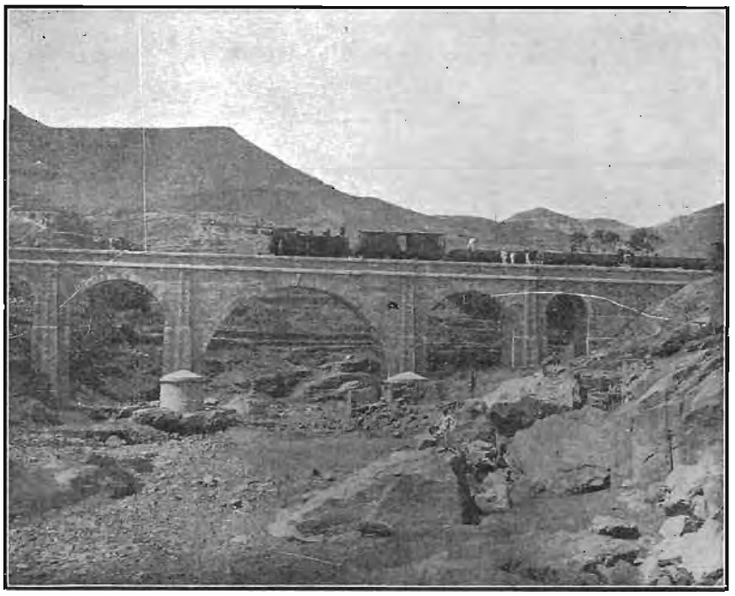
SI-HAN-HO
KIN-HO
TCHEU-HO
TOUNG-TZEU-HO
KAI-HO
SIAO-PE-HO
LIMITE
PROVINCE

of the mountain, with grades of 12% are passed to kilometre 236, and thence to T'ai-Yuan-Fu, (kilometre 243) the elevation being 800 metres.

The section between Cheou-Tang-Hien station (kilometre 160) and kilometre 200 is a very narrow winding pass, in which the villages and lands are poor and the crops hardly sufficient to maintain the inhabitants. Seventy-five per cent. of the farms have been abandoned and ruined since the famine of 1901. The opium smoking habit also contributes largely to the misery of the region. Notwithstanding this, this route was chosen for the line on account of its lesser grades.

The study made to the north of Cheou-Tang-Hien, passing through the valley of Ping-Teou and the neck of the Nan-Tchouang, includes grades and curves of 25 millimetres and tunnels of 150 to 500 metres, entirely in the loess. It is regrettable that these cannot be avoided as this valley is very rich in agriculture, is prosperous, and the railway would be near the coal pits of Cheou Tang-Hien and of T'ai- Yuan-Fu.

To sum up, the Shansi line is made of heavy grades. From kilometre 24 to kilometre 160, there are grades of 17% maximum, and from kilometre 160 to kilometre 243, the curves and grades are not more than 12%. It would appear as though the railway could be constructed in a normal way, if the grades were the only obstacle, but the curves of 100 to 150 metres radius could not be reduced without enormous expense, whereas in general, the curves of 100 metres radius are at points where it was necessary to make trusses from 8 to 10 metres high, and to augment the curves tunnels of great length had to be pierced.



SHANSI RAILWAY—THE BRIDGE AT KM. 144. THIS BRIDGE IS 105 METRES LONG AND 26 METRES HIGH

The approximate cost of a metre gauge line to unite T'ai Yuan-Fu and Cheu-kia-Tchouang, as the Chinese Government wanted, was estimated at a minimum sum of 80 million francs.

Earthwork and Track.

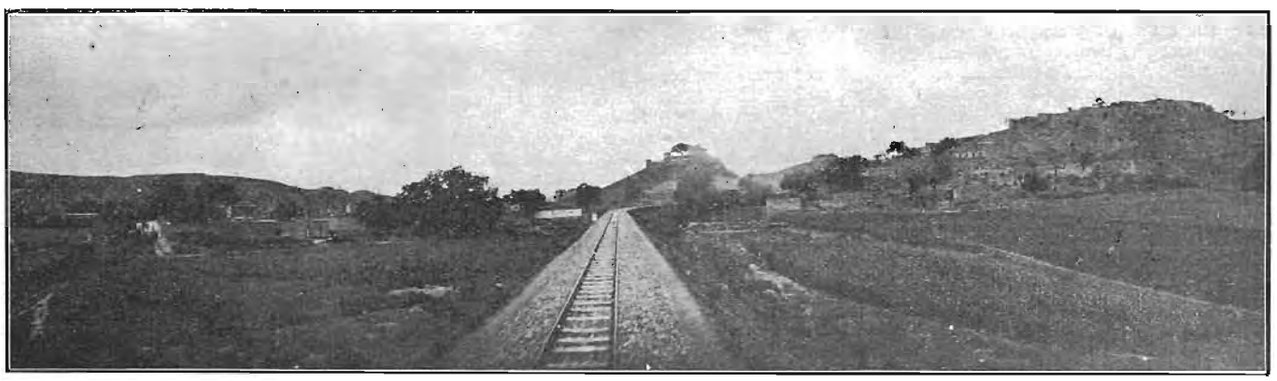
We have said that the work began in June, 1904. To Houe-Lou-Hien (kilometre 16) the earthwork in the loess was done quite rapidly with Chinese labor. From kilometre 24 the important work begins. After crossing the T'eou-Is-Yuen river over a bridge of 40 metres, the line runs over gullies in calcareous rocks, and under the Imperial post road over a loess filling 15 metres high. From kilometre 26 to kilometre 33 it is supported on terraces of loess, then runs through the tunnel of kilometre 43, which is 150 metres in length. The opening of the tunnel was a little difficult as the rocks, although hard, were cracked and intersected with pockets of clay.

Several routes were studied to bridge the Hsi-Hou-Ho river. Ordinarily it would appear more rational to make the crossing above the conflux of the two rivers, but this was impossible, so it was necessary to have three trusses of fifty metres each; then a grade from 23 to 30%, traversing the village of Nan-Houng-K'eou.

It was more feasible to cross over the delta where the two rivers meet, and although costly this passage was cheaper than a crossing higher up the river.

In order to protect the embankment on the delta against the swift current of the Hsi-Han-Ho, there is a stone facing between the abutments of the 10 metres bridge and the 50 to 60 metres bridges; the facings are protected by masonry deflecting groynes which receive the first shock of the current. The water is imprisoned between the four masonry walls and then run off slowly, acting as a buffer against the shock of the following current.

Other facings protected by groynes and fillings were constructed to preserve the embankment against the strong current of the Mien-Chouei. The groynes were built over a masonry foundation carried below the bed of the two rivers, to avoid undermining. During



SHANSI RAILWAY—A LEVEL STRETCH

SHANSI RAILWAY—ONE OF THE VILLAGES THROUGH WHICH THE LINE PASSES

the floods of 1905 to 1910 the embankment withstood the strain satisfactorily.

From kilometre 46 to kilometre 56 the line runs through the loess in embankments approaching 17 metres high, and a cutting of 650 metres long and 10 metres deep.

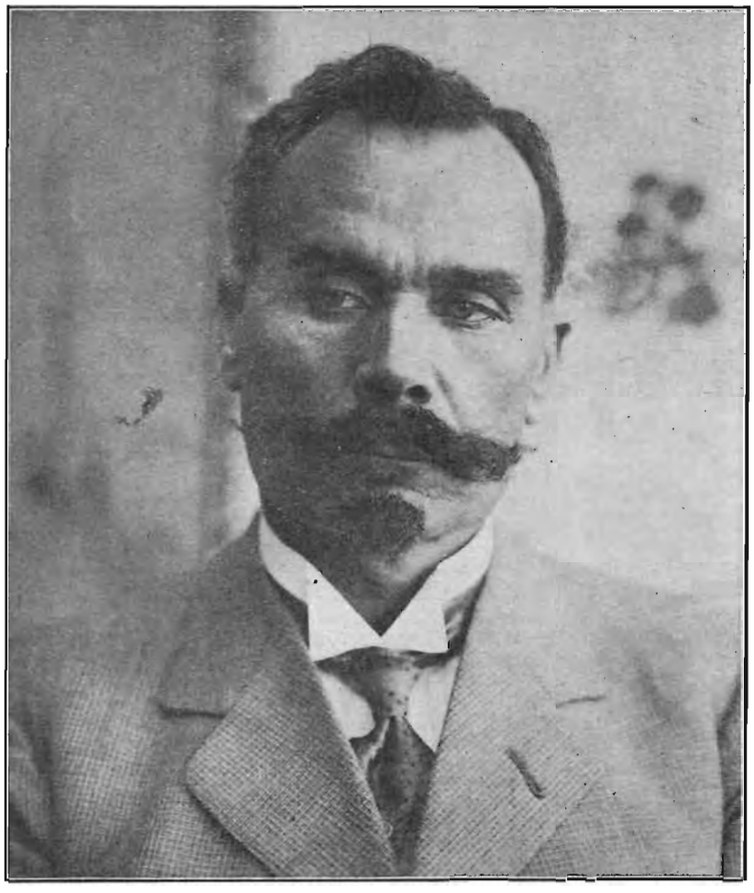
Great difficulties were encountered at kilometre 58. To cut down 60 metres of rock would have been expensive, as the rock was very hard, so it was found more economical to bridge over 50 metres and build a wall 100 metres long beyond kilometre 59.

The tunnel from kilometre 61 is pierced in hard rock, and emerges on a bridge of 75 metres, with a relieving arch of 10 metres. The rise is made by means of a service bridge with latticed beam, of 12 metres bearing, which serves also for the machines during the erection and rivetting of the bridge.

All the timber for temporary and false work used in bridge construction at kilometre 46, 60, and 61 was carried by coolies and then floated down the river. For the other big bridges the timbers were also carried by coolies and it was remarkable how the Chinese handled beams from 12 to 15 metres in length along the winding paths up steep mountain sides.

To diminish the difficulties, in floating the trusses temporary bridge were made of latticed beams, of 12.40 metres, the small timbers for which were carried by mules and donkeys, and the larger pieces by coolies.

Fifty metres from this metal bridge is a half-tunnel cutting over 30 metres long. The line continues over the flank of the mountain, profiting by all the ruggedness of the rock to act as supports for spans of 5 and 10 metres. The ravines are crossed by three viaducts with arches (of 10 metres), and piers 8 to 12 metres high. From kilometre 71, the ravine is passed by an arch. This bridge, as well as the preceding viaducts, were remarkably well constructed by a Chinese expert who, at the beginning, refused to accept the design; but under the influence of the Engineer-in-Chief he did the masonry in a way that could not be improved upon in Europe.



SHANSI RAILWAY—M. MILLORAT, ENGINEER-IN-CHIEF, UNDER WHOSE SUPERVISION THE LINE WAS CONSTRUCTED

Viaduct of Gniang Tzeu Kouan.

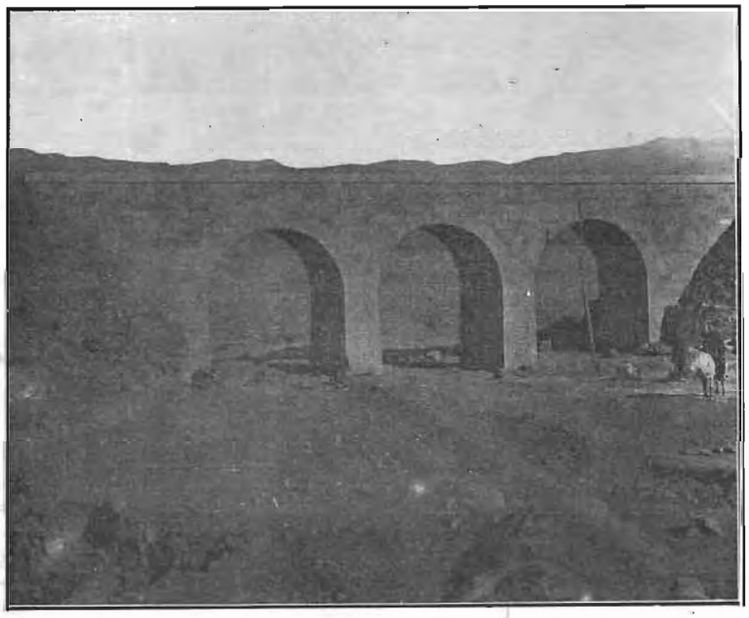
The largest viaduct on the line is at kilometre 74, and is situated at the foot of the town of Gniang-Tzeu-kouan. The railway follows the steep left bank of the river. On the right bank stands the town of Gniang-Tzeu-kouan, which extends over a plain to the foot of the mountains. This viaduct is 250 metres in length.

The first abutment was built over several springs spouting great jets 10 centimetres in diameter. After much excavation springs burst out and it was too late to change the direction; the sides of the cuttings had been well advanced and it was considered probable that had a change been made other springs would have been met with. The springs were plugged up with solid semi-crystaline limestone forming arches in some places and level in others. It would not have been possible to fill the springs by running in cement concrete; that would have been washed away at once. The base of the foundations was strengthened by placing large flat stones as close as possible one metre high on each side of the springs after having built the piers of the arches of limestone. Over these rough stones a rough box was placed as a frame for the masonry to take a massive concrete pier over 2.60 metres high, and round pillars were built over this.

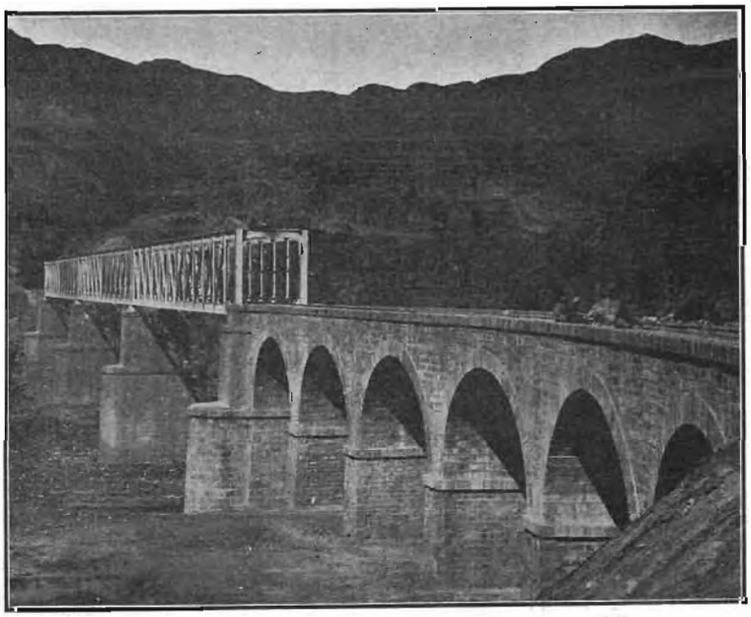
The construction of other columns did not present any difficulty. After freeing the foundations of water the engineers built the three pillars to two vaults of 10 metres with a viaduct of 100 metres radius.

From kilometre 75 to kilometre 90 the river runs straight, with perpendicular banks. It was impossible to lay the line on the river banks owing to the possibility of it being washed away, as the waters rise as much as 8 to 10 metres in a night and an embankment of 12 metres would have been necessary. The direction taken was judiciously chosen to avoid high supporting walls to the deep cuttings. It was necessary in many cases to pierce a tunnel in the steep banks.

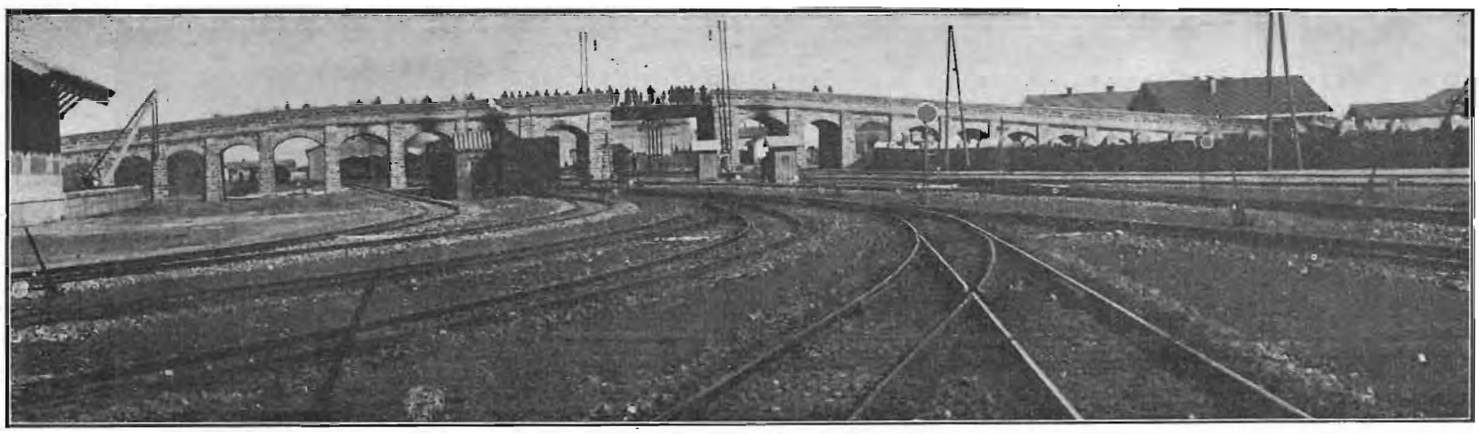
In these 15 kilometres there are five tunnels, of which two are 300 metres long, all on curves. The others vary from 130 to 170 metres long. To expedite the piercing of these tunnels operations were commenced simultaneously. One of the 300 metre tunnels, which could be opened in two points only, was completed in seven months, the work being



SHANSI RAILWAY—BRIDGE OF THREE 10 METRE ARCHES AT KM. 70



SHANSI RAILWAY—VIADUCT ACROSS THE GNIANG TZEU KOUAN AT KM. 73



SHANSI RAILWAY—OVERHEAD WAY AT CHEU KIA TCHOUANG

done at the rate of 1.40 metres per 24 hours work. During these seven months, one month was lost through Chinese holidays, New Year, Dragon festival, etc. All the work, together with the masonry, was done by a Chinese contractor.

At this place seven large viaducts with arches of from 5 to 10 metres span, were constructed, as well as a metal bridge of 75 metres with arches of 10 metres, being an exact repetition of the approach to kilometre 61.

The cutting entered on emerging from the tunnel at kilometre 87.800 is through loess with sides 26 metres high.

The construction from kilometre 90 to kilometre 188 was particularly difficult owing to the quality of the rock met with, especially in the tunnels, where fissures and pockets of clay to the full depth of the tunnels were found. In this locality there are several large viaducts with spans of from 8 to 10 metres. The river is crossed at kilometre 188 by a bridge of 65 metres and two arches of 10 metres each. These large spans were preferred, in certain points, to avoid constructing high piers in strong currents with doubtful sub-soil, and to minimise the risk of bad masonry by Chinese workmen.

From kilometre 122 to kilometre 151 the railway skirts the side of the mountain, is laid on beds of anthracite, several cuttings being in seams of coal. There are four cuttings from 20 to 26 metres deep in the loess, and one, practically in sandstone, with sides 40 metres high. The small and the large ravines have necessitated a large quantity of variable and important work.

At kilometre 144 is found a piece of the finest railway work in central or North China, a stone viaduct 90 metres long. The centre span is 20 metres, and the outer ones 10 and 5 metres. The rail is 19 metres above the bed of the river. This viaduct was built of beautiful sandstone piers by Chinese workmen, under the direction of the Chief Engineer.

From kilometre 151 to kilometre 170 the earthwork is through loess.

A sinuous defile with high and steep banks of red sandstone is penetrated to Chang Hon The water rises to 10 or 11 metres over the thalweg and the swellings are signalled by the countrymen. Several cuttings could have been avoided by crossing the river in several places by metal bridges of less than 75 metres. It was preferable to cut the banks on account of the difficulty of procuring good stonework in this part and also because earthwork is cheaper even though the curves of the bank had to be followed.

From kilometre 155 to kilometre 195 there are 850,000 cubic metres of earthwork, of which two-thirds are red sandstone; in this same portion there are five tunnels varying from 120 to 160 metres in length, a bridge of 50 metres of broad gauge, a bridge of 100 metres (two trusses of 50) and a bridge of 75 metres at kilometre 191. From kilometre 202 to kilometre 243 (sampan harbor of Tai-Iuen Fou) the earthwork shows nothing in particular.

It seems indiscreet to make cuttings 26 metres deep in the loess. It was impossible to evade this. It would also seem improbable that the loess would remain upright at these great heights, but it may be remarked that the loess upon which the sun shines during the summer remains vertical and supports a great weight, whereas the cuttings are made in the beginning of winter when the loess in a little wet, the latter freezes, and thaws, and can later be seen breaking away in slabs of from 30 to 40 centimetres thick along the whole length of the sides.

The small bridges up to three metres span are of wood. In places they are steel beams of 5 metres, 6 m 40, 7 m 60, 10, 20, 40, 50, 65 and 75 metres capacity.

The load calculations for the bridges were made on the French principle of August 1891. They were based on the hypothesis employed by trying one or several trains composed of two locomotives of 45 tons each, followed by wagons loaded to 30 tons. The trials were very severe and gave every satisfaction.

Superstructure.

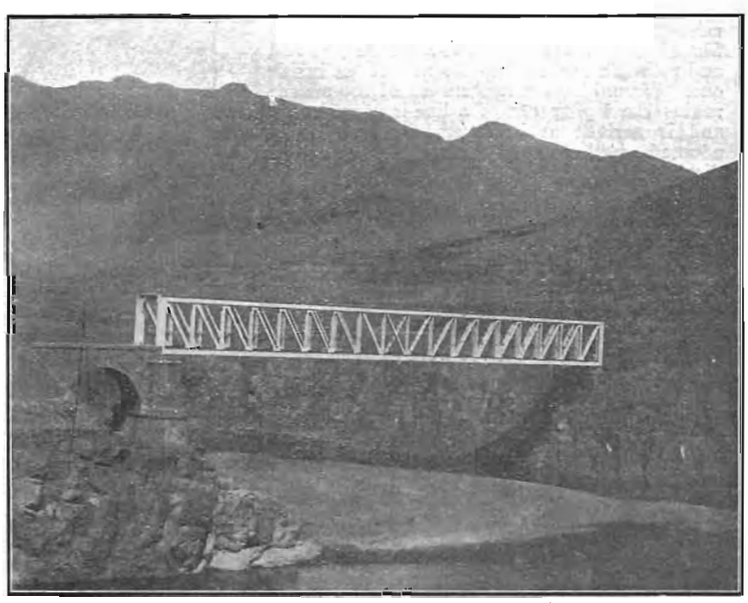
The track is 4 metres wide. The width inside the rails, in the curves of a radius of 300 metres and over, is 1 metre, and in those of lesser radius 1.015 metres.

The steel rails are of the Vignole type weighing 28 kilogrammes per metre, nominally 9 inches long. They are fixed by steel turrels with intermediary saddles on wooden sleepers.

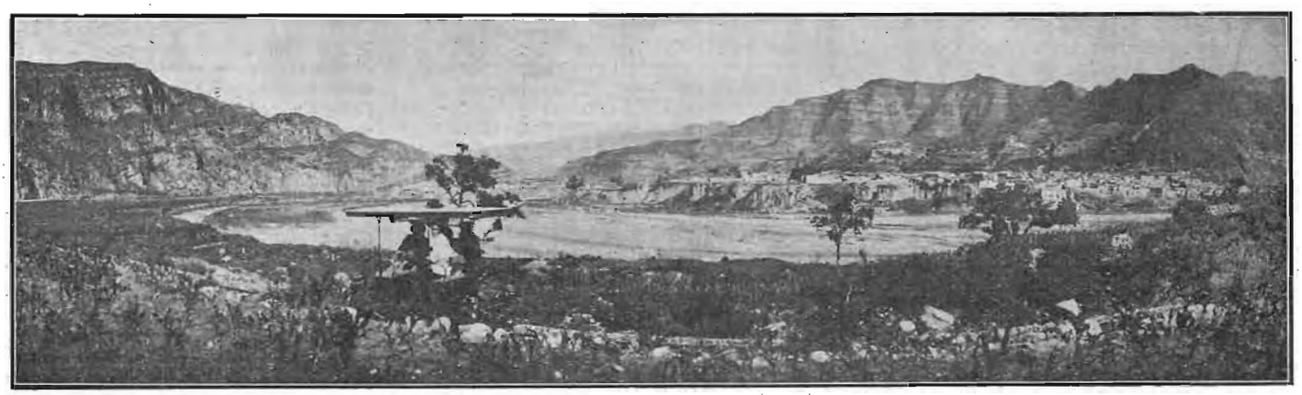
All the sleepers are of Narawood (Japanese oak) and Tamo (Japanese beech). The sleepers are normally spaced Om 225×Om 15.

The splints are in steel of Om 45 in length and weighing 5.625 kilogrammes for the interior splints and 5.475 kilogrammes for the exterior splints. They are pierced with four

SHANSI RAILWAY—75 METRE BRIDGE AT HSIA PAN CHEU



SHANSI RAILWAY—STEEL BRIDGE OF 75 METRE AT KM. 190



SHANSI RAILWAY—TWO VIEWS ILLUSTRATING THE CHARACTER OF THE COUNTRY THROUGH WHICH THE LINE PASSES

holes. The saddles join the splints in a way to oppose the displacement of the longitudinal rails.

After laying the inside rails of the curves of 300 metres radius turrels were placed over a certain number of sleepers to prevent the displacement of the rails.

The rise of the exterior rail was calculated on a supposed speed of 32 kilometres per hour; it is Om. 08 for a radius of 100 metres. Nevertheless a speed of 40 km. and 45 km. on curves of 100 is made daily.

Several companies use a rise in relation to the gauge, with its level over the axis, and lower the inside rail the same amount as they raise the outer one. The engineers of the Shansi Co. preferred to raise the outside rail and maintain the level of the axis of the inside one. When between two curves of 100 metres radius the laying out of a line is very simple, and is arrived at in several ways, the one adopted was by parabolic levelling where the displacement of the curve permitted.

Where two successive declivities differ more than one millimetre per metre they were joined by a series of inclined planes nine metres long differing between themselves with slopes equivalent to two millimetres per metre.

Material and Traction.

The working locomotives were designed with capacity to two relatively heavy trains over slopes often exceeding 20 m/m, and comprised the following.

32 Engines, Series 100; 6 Engines, Series 200; 12 Engines, for construction; 1 Engine, for normal gauge.

The engines series 101 and 201 are furnished with Clayton hand clamps for detaching purposes.

One locomotive, series 101, has a pulling capacity of 8 wagons of 30 tons each in winter and 9 in summer, of 11 tons tare and 20 tons, working over slopes of 15 m/m at 15 kilometres per hour.

One locomotive, series 201, has a hauling capacity of 10 carriages over slopes of 21 m/m at 22 kilometre per hour. They are specially attached to passenger trains.

A speciality of these locomotives is the position of the driver which allows him to see the signals and the road unhampered by either escaping steam, or smoke from the funnel. In effect, the ideal working position of these

SHANSI RAILWAY—THE ENTRANCE TO THE TUNNEL AT KM. 97

engines is with the chimney to the rear. Other engines, series 201, have a water tender attached to them.

The passenger carriages are: 3 first class carriages; 10 mixed (1st and 2nd); 25 third class; 7 carriages for the chief engineer, of which one was of normal gauge for use from Cheu Kia Tchouang to Peking and Tientsin.

The first class and mixed carriages have side passages to the lavatory; they are provided with hand clamps for attaching and detaching. They have covered platforms at each end. The first class carriages have seats for 14, and the mixed for 20 passengers.

The third class carriages have seats for 23 passengers on each side with a passage in the centre. These have also a covered platform, and a lavatory, and are attached and detached in a manner similar to the first-class carriages.

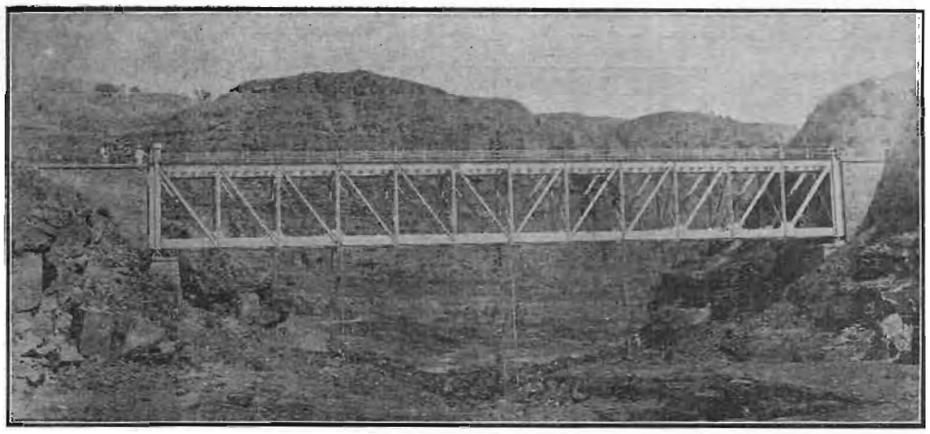
Three third-class and one first-class carriages were converted for the use of the engineers and supervision staff; the furnishing of these carriages includes dining-room, sitting-room, bed-room, kitchen and toilet, etc.

All the carriages were built on bogie chassis with wheels of O M 70 diam. The carriages are hooked in sets and heated by steam from the engine.

The length of the chassis is 9.16 m. the width 2.60 m and the height of the frames 2.527. The platforms at each end are O. 75 m. wide. The total length over all is 12.21 m. The tare weight of these carriages averages 25-50 tons; the first class are 16 tons.

There are 8 postal and 8 luggage vans, built on chassis of the same dimensions as the carriages, and are divided into two compartments, with a lookout or glass covered observation seat in each compartment.

The luggage vans have an air valve in the guard's compartment, surmounted by an indicator which works the brakes for a quick stop, these valves work automatically when the driver applies his brake or they may be operated individually by the guard.



SHANSI RAILWAY—TYPICAL STEEL BRIDGE OF 50 METRE AT KM. 180

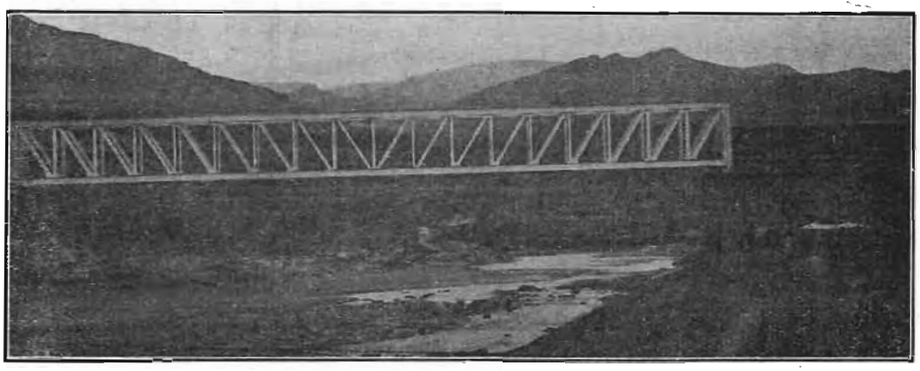
There are 440 of these wagons and comprise the following:—

Blind wagons 2; covered 80; flat stepped 10; tilting or dumping 196; high sided 40; medium high 38; tank 6; assisting 2; extension bogies 4; P. F. 27; N. F. 36; 3 bogies and two frames, 1 with special attachments.

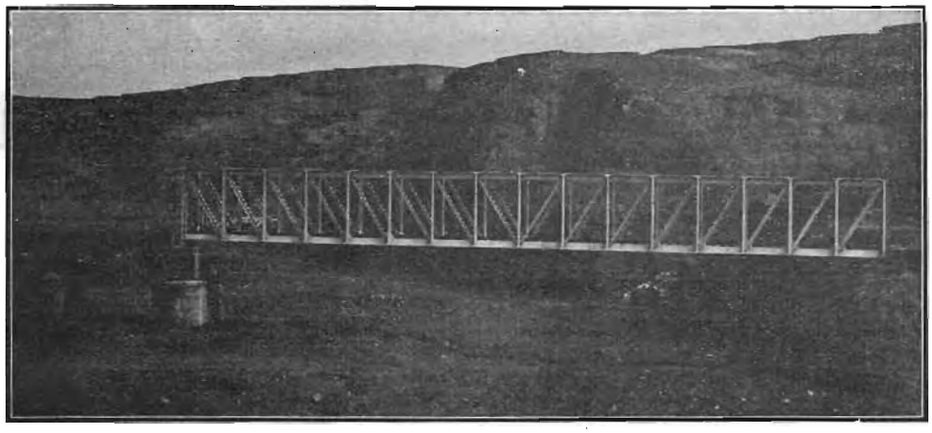
The chassis of the covered wagons are 8.20 m. long and 2.20 m. wide, the frame 8.45 m. long and 2.39 m. high; with a covered passage at one end. They have sliding doors. Some of the goods wagons have windows and others have a compartment for the guard

The coal cars are 8.40 m. long and are intended for the transportation of anthracite and oil. They are 11 tons and carry 20 tons, 25 of them are larger (10.26 m) and carry 25 tons.

The chassis of the flat wagons are 9.22 m. over 2.20 m. Some of these have platforms 0.40 m. high whilst others have steps fixed to the side of the chassis.



SHANSI RAILWAY—75 METRE BRIDGE AT KM. 190



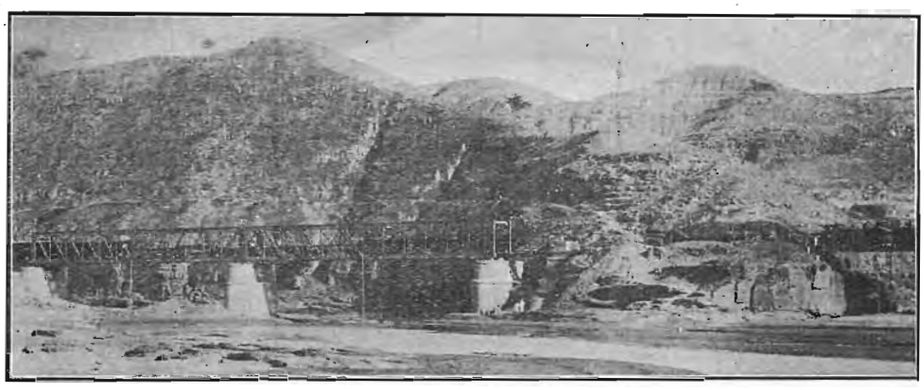
SHANSI RAILWAY—65 METRE BRIDGE AT HSIA OU TOU

The bodies of these wagons are 8.60 m. long and 1.22 m high; with a platform all around. They weight 11.5 tons empty. They are in daily use for the transport of very large blocks of anthracite. The sides are not strained by this work.

The tank wagons have a capacity of 25.3 m. and are mounted on chassis measuring 9.20 m. long (inside measurements). They are intended for the transport of petrol. Two of these, which are in different shape from the others were made in the workshop at Cheu Kia Tchuang.

There are 66 of these wagons of which 30 are similar to the flat wagons and carry 30 tons, the remaining 36 are smaller, 7.06 m. in length (over all) and carry only 10 tons.

There are three workshops for repairs, one at Cheu Kio Tchuang, one at Iang Ts-Iuen, and one at T'ai Yuan Fou.



SHANSI RAILWAY—STEEL BRIDGE AT KM. 185

HONOURS FOR RAILWAY-MEN IN CHINA

RAILWAY MINISTER'S RECOMMENDATIONS

The following have been recommended by the Minister of Posts and Communications for honours:—

FIFTH CLASS: of the Chia Ho or "Felicitous Grain"

A. W. U. Pope, General Manager, Shanghai-Nanking Railway.
M. Bouillard, Chief Traffic Manager, Kin-Han Railway.
M. Ebray, Chief Engineer, Pienlo Railway.

SIXTH CLASS;

J. E. Foley, Traffic Manager, Peking-Mukden Railway.
W. Henderson, C.A., Chief Accountant, Peking-Mukden Railway.
D. P. Ricketts, M.I.C.E., Engineer-in-Chief, Peking-Mukden Railway.
A. G. Cox, Asst. Engineer-in-Chief, Peking-Mukden Railway.
M. Orphanides, Chief Engineer Maintenance Dept. Kin-Han Railway.
J. Barber, General Manager, Taokow-Chinghua Railway.
E. R. Morriss, Secretary, Shanghai-Nanking Railway.
A. C. Clear, Supt. Permanent way and works, Shanghai-Nanking Railway.
Frank Grove, Engineer-in-Chief, Canton-Kowloon Railway (Chinese sec.).

SEVENTH CLASS:

M. Marchand, Chief Engineer Locomotive Dept., Kin-Han Railway.
W. H. Steele, Asst. Traffic Manager, Peking-Mukden Railway.
A. de Challoy, Acting Supt., Locomotive Dept., Tcheng-tai Railway.
R. Lallemand, Engineer-in-Chief, Tcheng-tai Railway.
J. de Lapeyiere, Chef du service des voies et travaux, Tcheng-tai Railway.

KIRIN-CHANGCHUN RAILWAY

KIRIN-CHANGCHUN RAILWAY—BIRD'S-EYE VIEW OF KIRIN CITY

KIRIN-CHANGCHUN RAILWAY—TRACK LAYING NEAR KIRIN

In the November number of the FAR EASTERN REVIEW we announced that the Kirin-Changchun Railway had been opened for passenger and goods traffic on October 21st. Some particulars of the line were then given, but these we are now able to supplement, and also to reproduce some photographs illustrative of the country through which the new railway passes. The information is not so full as we would like to have made it, as the final figures in regard to the cost of construction are not yet available.

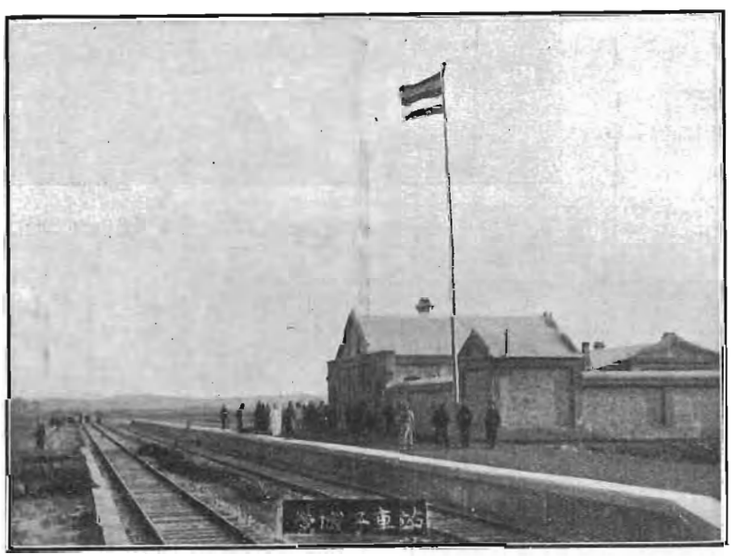
The line connects Kirin, the capital of the province of that name, with Changchun, the point where the Japanese and Russian systems in Manchuria meet. Its length, exclusive of sidings, is 79 miles. The temporary line leading to the cut over the Tumenling Pass has a gradient of 1 in 30, but the use of this temporary line will of course, be discontinued as soon as the tunnel is completed. The maximum gradient on the line proper is 1 in 100 and the radius of the sharpest curve 1,320 ft.

The total bridge openings amount to 3,926 ft. and the total culvert openings to 133 ft.

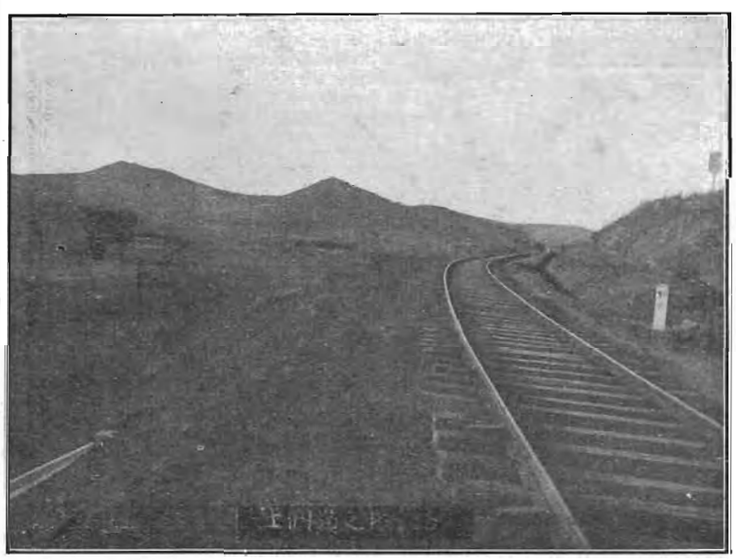
Although, as already stated, owing to the final figures not being available we cannot give the total cost of construction, we understand that up to the end of October, 1912 Tls. 3,500,000 had been spent. This includes the cost of construction of the line, buildings, rolling stock and shops; the price paid for land, salaries, and general expenses.

The traffic returns for November were as follows:—

Passengers	$28,968.65
Freight	$34,971.34
Total.....	$63,939.99

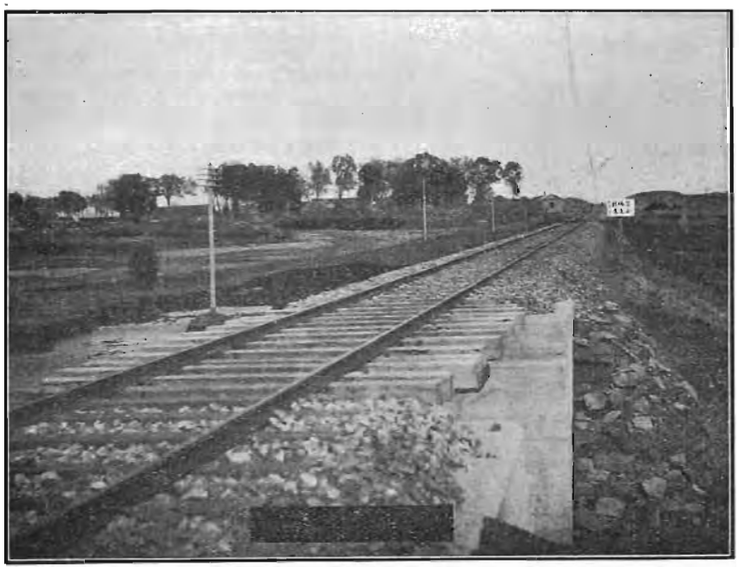


KIRIN-CHANGCHUN RAILWAY—YIU CHEN TSE STATION

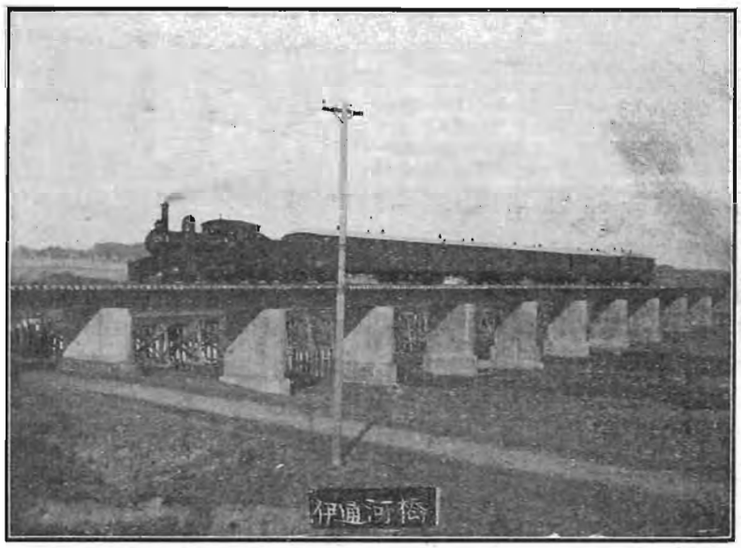


KIRIN-CHANGCHUN RAILWAY—APPROACHING THE TUMENLING PASS

KIRIN-CHANGCHUN RAILWAY—CHANGCHUN STATION AND STAFF

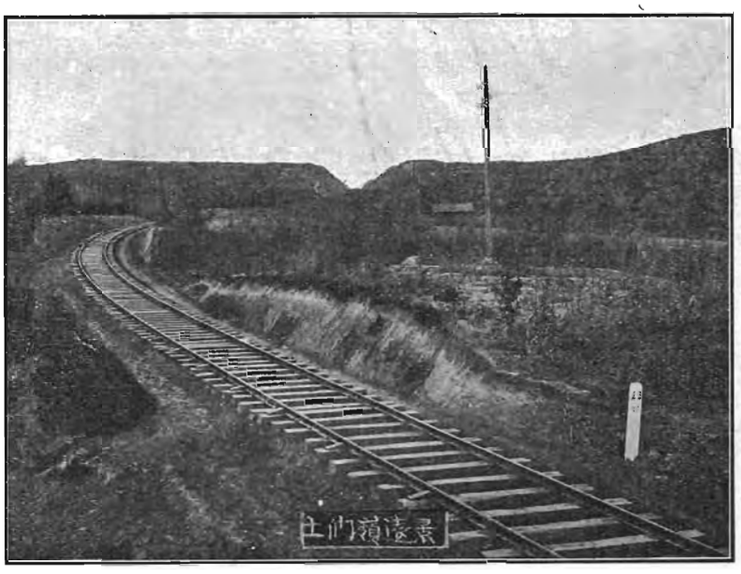


KIRIN-CHANGCHUN RAILWAY—A STRAIGHT RUN NEAR KA LUN



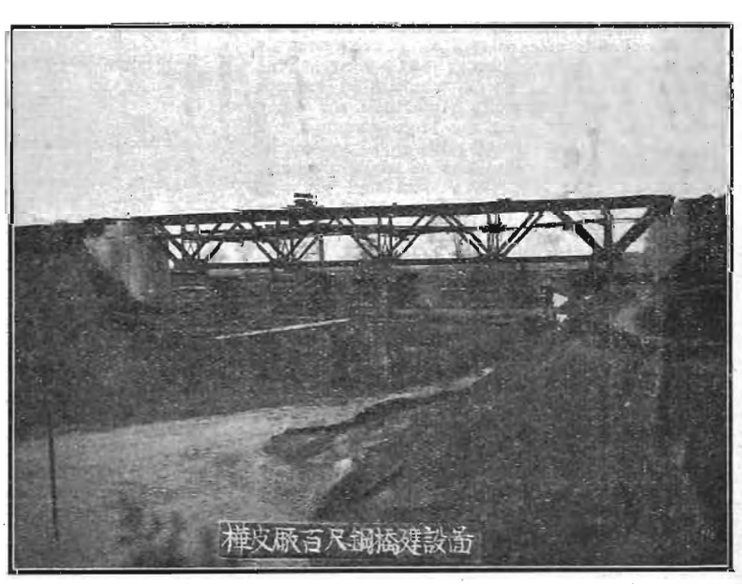
KIRIN-CHANGCHUN RAILWAY—YI-TING HO BRIDGE

KIRIN-CHANGCHUN RAILWAY—THE SUNGARI RIVER AT KIRIN



KIRIN-CHANGCHUN RAILWAY—APPROACHING THE TUMENLING PASS FROM THE WEST

KIRIN-CHANGCHUN RAILWAY—SEVENTY FEET CUTTING AT SAN-TO LIU



KIRIN-CHANGCHUN RAILWAY—HUA PI CHAUN DECK TRUSS

By the treaties between China and Japan signed in 1907 and 1908 the Japanese Government was to furnish *Yen* 2,150,000 through the South Manchuria Railway, towards the expenditure. The chief engineer and head treasurer are Japanese, but the entire management rests with the general manager appointed by the Chinese Government. The present general manager is Mr. T. C. Sun, an able and energetic official.

Work on the line was started in December 1909. Surveys were started from both termini. The first Chinese manager was Mr. Fu Po-liang. The work of construction was retarded owing to several changes in the management, and also by the severe climate. Even at the beginning of May the ground is found to be freezing at a depth of one foot. Practically construction work could only be carried on for five months in the year. The work was also delayed by the outbreak of plague.

KIRIN-CHANGCHUN RAILWAY—YIN-MO HO BRIDGE

The commercial possibilities of the line are most favourable, and it is believed that a great deal of the traffic that is now borne on the Sungari will be transferred to the quicker route.

ROLLING STOCK

2	Shunting Engines
7	Freight and Passenger Engines
1	Private Car
4	First and Second Class Composite Cars
10	Third Class Passenger Cars
1	Thirty ton Freight Car
40	Thirty ton Covered Cars
10	Twenty ton Covered Cars
27	Thirty ton Coal Cars
20	Thirty ton ballast Cars
4	Brake vans.

MANILA'S WATER SUPPLY

800,000 GALLON RESERVOIR PROJECTED.

The old scheme to utilize the flow from the Pagsanjan falls for Manila's water supply to insure a sufficiency for all times of the year, which was revived recently to the extent of being submitted to the acting governor general with recommendations, has probably reached its last resting place, in the hands of Chief Engineer A. Gideon of the department of sewer and waterworks construction, to whom it was referred on December 27 by the municipal board.

Mr. Gideon explained, when questioned by a *Manila Daily Bulletin* representative, that engineers from his department are now in the field locating sites for additional storage reservoirs to connect with the present source of supply from the Mariquina river at the Montalban dam. Two sites are already in view, said Mr. Gideon, on the Manila side of the Mariquina river. One has been surveyed and the bureau of science has been asked to send geologists to determine if the ground is sufficiently water tight to warrant building a dam. The other site is a mile and a half nearer the city and is being investigated with a view to economy of construction and desirability of location.

The plan is to construct a storage reservoir of eight hundred million gallons capacity. This alone, Mr. Gideon stated, would hold enough water to supply the city of Manila for sixty days and would meet the requirements for a number of years. During the flood season, he explained, 60,000 cubic feet of water a second flows over the Montalban dam and goes to waste, while in the dry period the volume dwindles to only six cubic feet. The quantity of the overflow during the rainy season, he said, is 13,000,000 gallons every half minute, which is enough to supply the city for a whole day. The Montalban dam reaches a depth of 40 feet and the chief engineer asserted that repairs during the year have reduced the leakage from 28,000,000 to 14,000,000 gallons a day. The total flow during the dry weather now is 11,000,000 gallons a day, which is about 2,000,000 gallons short of the city's requirements. With the proposed 800,000,000 gallon reservoir in addition to the three now in use the supply will be brought up close to the present pipe line system capacity, which is 22,000,000 gallons a day. It is estimated that the consumption will reach this limit by about 1925, when additional piping will have to be laid.

RECONSTRUCTION OF CANTON

The fire which took place in Canton on the night of November 9th, says a correspondent writing to the *Hongkong Daily Press*, may be a blessing to the city, if not to the few insurance companies who have to liquidate their business because of the heavy losses. The Government, according to Mr. H. L. Wu, Acting Superintendent of Public Works, will take a new survey of the burned district and cut the land into blocks, and will not issue any new permits for buildings until the rules and regulations for the improvement of that district into a modern city are complied with. The Governor-General, Wu Hon-man, has already signified his approval of the plan and will formally put the rules into force as soon as they are ready in detail.

Superintendent Wu is acting for Mr. R. C. Johnson, who is travelling with Provincial Treasurer Liu to Peking on financial business connected with the Government. Supt. Wu will have the opportunity to plan for Canton, at least a part of it, a modern town. Supt. Wu is a graduate of Canton Christian College and the University of Illinois. He is one of the many foreign educated young men now governing Canton.

The *Manila Daily Bulletin* of December 19 reported that the installation of the Otto suction 75 horse power gas producing plant at the bureau of science, medical school, and Philippine General Hospital, for generating electricity has been completed. The contract calls for three months of operation absolutely free during which time it must give complete satisfaction or the firm that installed it must tear it down and remove it.

An expert was sent to Manila from Germany to superintend the erection of the plant, which was designed especially for Bataan coal fuel and 500 tons of the product of the Bataan mine has been laid in. This amount, it is claimed, will operate the plant for a period of two years and generate electric current for all purposes. Mr. McGregor, chief of the building department of the bureau of public works, stated that if the Bataan mine resumed operations it was likely that more of these gas plants would be installed, as current can be supplied by this means very cheaply.

SUGAR IN THE PHILIPPINES

The reports of the exports of Philippines sugars show that there were 110,604 tons in 1909 and the exports rose to 183,077 tons during the fiscal year ending June 30, 1912, reports the *Louisiana Planter*, and continues:—As is well known, these sugars produced in the Philippines and thus exported are generally of very low grade and similar to that vast crop of over two millions of tons of cane sugars made in India and consumed altogether at home.

Now, for the first time, a more modern style of sugar house has been equipped and put in operation near La Carlota in western Negros and a small mill was erected with a capacity of grinding 150 tons of cane per day. We understand that this was turned out in the usual vacuum pan style, with centrifugal purging machines and that the sugar brought 4½ cents in Iloilo from the wholesale dealers. It is stated that a number of small mills are now being constructed at other points, and a large one at San Carlos.

A large cane mill has been completed on the San Jose estate on the southern part of the island of Mindoro, but this season it will only be used for reboiling low-grade sugars and making them over into higher grades, or semi-refining them. It was reported that on this estate some 2,500 laborers were at work preparing land and planting cane, with 800 acres already planted.

These vacuum pan and centrifugal sugar houses, producing hard crystals of sugar instead of the soft muscovado sugars hitherto produced, will quickly work a revolution in the sugar industry in the Philippines. The Hawaiians are now making about ten times as much sugar as they thought was their extremest limit less than forty years ago. Things move more quickly now in these days of big steamships and wireless telegraphy, and the Philippines are apparently as near to us, or nearer even, than the Hawaiians.

FAR EASTERN RAILWAYS

CHINA

OFFICIAL RETURNS OF REVENUE

The following revenue returns of the railways of China, which are official, will be found of interest:—

Tientsin-Pukow Railway

(Northern Section)

Receipts for the first ten days of November, 1912.

Passengers	$54,851.155
Goods	$34,516. 50
Total	$89,367.655

For the second ten days of November, 1912.

Passengers	$62,196.365
Goods	41,182. 77
Total	$103,379,135

For the third ten days of November, 1912.

Passengers	$60,577.395
Goods	45,003. 68
Total	$105,581.075

Shanghai-Nanking Railway

The following figures of traffic returns (approximately) for the week ended December 14, 1912 are issued by the Shanghai-Nanking Railway:—

For the Week.

Year.	Passengers.	Goods and Sundries earnings	Total
	$	$	$
1912....	41,608	9,758	51,366
1911....	58,790	6,825	65,615
Increase.	—	2,933	—
Decrease.	17,182	—	14,249

For fifty weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1912....	2,140,199	396,656	2,545,855
1911....	1,822,540	299,311	2,121,860
Increase.	326,650	97,345	423,995
Decrease	—	—	—

The week ended December 21, 1912:—

For the Week.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1912....	38,567	8,200	46,767
1911....	52,304	6,810	59,114
Increase.	—	1,390	—
Decrease.	13,737	—	12,347

For fifty-one weeks.

Year.	Passengers.	Good and Sundries	Total
	$	$	$
1912....	2,187,766	404,856	2,592,622
1911....	1,874,853	306,121	2,180,974
Increase.	312,913	98,735	411,648
Decrease	—	—	—

The week ended December 28th, 1912:—

For the week.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1912....	40,852	6,312	47,164
1911....	54,719	6,083	60,802
Increase.	—	229	—
Decrease	13,867	—	13,638

For Fifty-two weeks.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1912....	2,228,618	411,168	2,639,786
1911....	1,929,572	312,204	2,241,776
Increase.	299,046	98,964	398,010
Decrease	—	—	—

The week ended January 3, 1913:—

For the Week.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1912*..	48,266	9,486	57,752
1911†..	52,407	4,483	56,890
Increase.	—	5,003	862
Decrease	4,141	—	—

For fifty-three weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1912*..	2,276,884	420,654	2,697,538
1911†..	1,981,979	316,687	2,298,666
Increase	294,905	103,967	398,872
Decrease	—	—	—

The week ended January 11:—

For the Week.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	49,479	10,531	60,010
1912....	52,136	5,207	57,343
Increase.	—	5,324	2,667
Decrease	2,657	—	—

For one and a half weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	78,176	15,833	94,009
1912....	96,432	8,568	105,000
Increase.	—	7,265	—
Decrease	18,256	—	10,991

The week ended January 18:—

For the Week.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	45,907	9,557	55,464
1912....	48,964	4,453	53,417
Increase.	—	5,104	2,047
Decrease	3,057	—	—

For two weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	124,083	25,390	149,473
1912....	145,396	13,021	158,417
Increase.	—	12,369	—
Decrease	21,313	—	8,944

Summarized Statement

			Total
Peking-Mukden	Nov.	1912	$1,590,327. 60
Tientsin-Pukow (Northern & Southern Sections)	,,	,,	$ 524,678.865
Peking-Hankow	Nov.	1912	$1,328,745. 01
Tao-Ching Hongping Taels 39.957.85 c. @ 7.10	,,	,,	$ 56,278. 70
Tcheng-Tai	,,	,,	$ 249,631. 97
Peking-Kalgan	Dec.	,,	$ 200,157.815
Kalgan Extension	,,	,,	$ 31,479. 30
Pien:o	Oct.	,,	$ 82,572. 70
Canton-Kowloon	Sept.	,,	$ 47,660. 40
Shanghai-Nanking	53 weeks		$ 2,697,538

* These figures are for the four last days in December, and the first three days in January.

† These figures are for the six last days in December, and the first day in January.

Tungyang-Mingkuo Railway.—The *Eastern Times* reports:—There is a scheme to build a railway between Tangyanghsien, Kiangsu, and Mingkuo-tu, Anhwei, extending 115 miles at the cost of $6,000,000. The rich people of Tangyang, Piaoyang, Kintan, Chienping and Hsuancheng have proposed to subscribe $2,000,000 towards the capital and they have asked the Railway Administration under Dr. Sun Yat-sen at Shanghai to rise $4,000,000. However the Railway Administration has not decided on the matter and probably it will be some time yet before it is carried out.

Nanchang Pinghsiang Railway.—It is reported by the *Eastern Times* that the Tutuh of Kiangsi has received the following telegram from the Department of Communications:—In planning the important railway lines in China it is found that in Kiangsi there is no line to facilitate communications while there are rich products in that province and thus people are not enjoying the benefit of having such rich products. The railway from Kiukiang to Nanchang is only a short line from Nanchang to the Yangtsze and unless the line is extended beyond Nanchang it is not of much use. At present in building the Hankow-Canton Railway there are people who propose to build a line between Nanchang and Pinghsiang so as to connect with the line between Pinghsiang and Chuchow on the one hand and with that of Nanchang and Kiukiang on the other so as to develop the industries and trade of the province. A certain British syndicate has proposed to give a loan for the said line between Nanchang and Pinghsiang and at this moment when China is simply depending on foreign capital the loan may be negotiated. The Tutuh is asked to investigate the matter.

The Ningpo Railway.—A Ningpo correspondent wrote to the *North-China Daily News* on December 23 as follows:—With a haste contrasting strangely with previous dilatoriness, the Ningpo end of the railway, which is to connect this port with Hangchow and Shanghai, has been opened to traffic. The lines have only as yet been laid to a distance of twenty or thirty *li*, and the station at the Ningpo end consists of little more than a raised platform and a galvanized iron shelter, but the formal opening was arranged to take place on Sunday last. There was a large gathering of local officials and gentry, with companies of students from the schools, and after a number of complimentary speeches, the first passenger train was occupied by the guests and ran its course. Complimentary tickets extending over three days have been issued in large numbers. There is no likelihood of any large amount of passenger traffic on the present short distance, but it is evidently expected that the demonstration of a real beginning may help to replenish the funds which are still sadly lacking.

Burma-Szechuan Railway.—Great Britain, with a view to establishing connection between Burma and Chengtu, the capital of Szechuan Province, by extending the Burmese Railway line, is now constructing a road on the frontier between Yunnan and Burma.

Canton-Huichow Railway.—The Governor of Kwangtung Province is contemplating to borrow a loan of $10,000,000 from America and another loan of $15,000,000 from Great Britain in connection with the proposed Canton-Huichow Railway.

Pukow-Sisyangchow Railway. — Shen Yun-pei, ex-Vice-Minister of Communications, has been appointed Director-General of the Pukow-Sisyangchow Railway, and he will consult with the Peking Syndicate about the flotation of the loan, but he has not yet decided whether the clauses of the agreement will follow the example of the Shanghai-Nanking or Tientsin-Pukow Railways (*Chinese Report*).

JAPAN

Railway Development.—According to the investigations of the Japan Railway Board up to the end of December last the total capital of private steam railways, light railways, and tramways, that applied for charters or were granted charters for construction during last year is represented to aggregate 296,000,336 yen, their total length reaching 6,200.57 miles.

The particulars are as follows:—

LIGHT RAILWAYS

Newly applied for charters:

Number	Mileage	Capital Yen
120	1,688.26	95,676,727

Charters granted:

313	2,928.44	138,369,150

TRAMWAYS

Newly applied for charter:

110	1,079.87	14,766,959

Charters granted:

2	11.10	60,000

PRIVATE STEAM RAILWAYS

Newly applied for charters:

2	91.40	10,300,000

Charters granted:

11	400.80	36,400,500

Included in the above are seven steam railways and light railways with a total length of 109 miles 67 chains and capitalized at 4,505,000 yen, which were granted charters in accordance with the provisions of the Light Railway Law.

They are as follows:

Name	Mileage m. c.	Capital Yen
Higo Railway	23.40	1,000,000
Aibi Railway	9.60	350,000
Seto Electric Railway	2.63	75,000
Tono Railway	10.40	450,000
Aichi Electric Railway	8.64	1,500,000
Nobi Electric Railway	31.40	540,000
Shunan Electric Railway	18.00	4,575,000
Total	109.67	4,575,000

Extensions and Repairs.—Baron Goto, the Japan Minister of Communications, is quoted in the *Asahi* on the subject of the postponement of the extensions to and repair of the railways. He is stated to have said that in view of the faulty administration of the preceding Cabinet, he would be obliged to observe a policy of curtailment in the railway works for the next fiscal year, as there was no prospect of his being able to raise the required foreign loan, though something might be done to relieve the present situation if the Balkan question were brought to an early settlement. At any rate he must frame his Budget on the basis of funds that are sure to flow into his Department. He meant to get an advance of fifteen million *yen* from the Deposits Account of the Finance Department, which, added to an equal amount of profits from the existing railways, would make an available fund of thirty million *yen* to be spent upon new lines and repairs. The original estimates for 1913-1914 were 50,200,000 *yen*, of which 200,000 *yen* were to be defrayed out of the Deposits Account and the balance raised by a public loan. In the event of Baron Goto's estimates being carried out, that is to say thirty million *yen* being devoted to the work of construction and repairs, continues the *Asahi*, supposing that the work postponed from last fiscal year amounted to ten million *yen* and will consume the amount out of the funds provided for the next fiscal year, there will remain only twenty million *yen* to be applied for works that were originally calculated to require 50,200,000 *yen*. It comes to this, therefore, that work will be carried on only on such lines as are nearly completed and improvements will be restricted to such as are of absolute necessity. Suspension, rather than postponement, is the word fitted to describe the present situation of railway work in this country.

KOREA

Korean Railway Extension.—Mr. G. Oya, chief of the Korean Railway Board has made the following statement concerning the railways in Korea. The appropriation asked for the Railways in Korea for the coming fiscal year is yen 8,500,000. Out of the above estimates some will be spent for the extension of the line between Seoul and Wonsan, and also for the Honan line, while there will be some asked for the reconstruction of the iron bridge over the Hangku River. The mileage of the Seoul-Wonsan line is 135 miles of which 60 miles from Seoul to Teolwan is already open for traffic. Further on, there is a line of 15 miles reaching the peak of Honpulrian on which there is a construction engine ahead at work. Twenty miles from Wonsan there is a line now completed and there are fourteen tunnels and twenty iron bridges on the line beyond Honpulrian. The completion of the whole line is expected in 1915. In the Honan railway Tadeon and Hoppo and 85 miles from Tadeon to Honan, and the branch line to Unsan, 15 miles in extent, are already open for traffic. The line between Honan and Hoppo will be completed next year. The reconstruction of the Hangku iron bridge will be started next year.

Tongnai Light Railway.—On July 2 last the Korea Gas Co. of Fusan, owners of the Fusanchin-Tongnai light railway, obtained from the Korean Railway authorities permission to extend the line to Taiku via Ulsan and Kyongju and also to construct a branch line from Kyongju to Yongil Bay, the aggregate length of the lines to be newly laid exceeding 100 miles. Mr. Udaguchi, President of the company, subsequently announced that the construction work would be undertaken next spring. "It is now stated that it will be difficult for the company to undertake the work at least for the time being. The company is capitalized at three million *yen* and for several years past it has been unable to pay any dividend to its shareholders. This year, however, a small dividend was paid, but the company is far from possessing any large amount of surplus money. Under the circumstances, the undertaking of the new enterprise above referred to will entail an increase in the capital of the company, besides the non-payment of dividend for some years to come. Many shareholders of the company therefore object to the work being undertaken at present.

Yalu Railway Bridge.—The Yalu Railway Bridge was to be lighted by electricity from December, 1912. The Bridge was to be divided into two lighting sections at the middle. The lighting of the northern half will be undertaken by the South Manchuria Railway, and the southern half by the Chosen Railway.

SIBERIA

The Amur Railway.—From a report on the Russian Budget for the year 1912 and the Provisional Gross Estimates for the year 1913 by Mr. Hugh O'Beirne, Councillor of His Majesty's Embassy at St. Petersburg, it appears that £600,000 were assigned for the purpose of rebuilding certain portions of the Trans-Siberian Railway in 1912. The total cost of the work, which is nearing completion, is now put at £7,700,000. The sum for duplicating the track of the Trans-Siberian Railway is estimated at £8,900,000. Up to the end of 1911 £4,400,000 had been assigned and £2,200,000 were assigned in 1912. The estimated cost of the Amur Railway in £22,900,000. Up to the end of 1911 £7,500,000 had been assigned and £7,700,000 were assigned in the present year.

MANCHURIA

South Manchuria Railway.—Some of the fresh enterprises originally planned to be taken in hand during the present fiscal year by the South Manchuria Railway Company have been put off to the next fiscal year. In consequence, a curtailment of about Y2,000,000 has been effected in the capital expenditure set aside for the present fiscal year. It is expected that a reduction by about an equal amount will be made in the capital expenditure for the next fiscal year, making the amount under that item for actual defrayment about Y14,000,000, which will be invested principally in the undermentioned undertakings:—

Improvement of the Main Line and the Mukden-Antung Line; construction of passenger and goods cars; prosecution of Dairen Harbour Works; widening of the entrance to the Kawasaki Dock; foundation work for the new premises of the Central Laboratory; establishment of an agricultural experimental station at Kungchuling; construction of transfer arrangements between steamer and wharf at Antung; construction of new warehouses at Yingkou, &c.

The management of the South Manchuria Railway is reported to have decided to construct a third quay to the west of the Main (West) Quay at an estimated cost of Y3,000,000. According to the present plan, the new quay is to start at 900 ft. west of the Main Quay and is to project outward 1,950 ft. in a parallel line to the other. It will have a width of 400 ft. The shore line intervening between the Main Quay and the new quay, 900 ft. long, will be also included in the new quay line, making its total length 5,200 ft., capable of berthing twelve vessels. The aggregate berthing capacity of this port, when the new quay is completed, will reach about thirty vessels. The central base between the Main Quay and the proposed new one will have 25 ft. of water, and the farthest sections of the new quay 33 ft. of water, in both cases at low tide. The construction of the new quay, which means the creation of another Basin at the west of the existing one, will be put in hand early in the next fiscal year, and will be completed in about five years.

The receipts of the South Manchuria Railway Co. during Dec. 1912, amounted to Y2,618,722.38. Compared with those of the same month of the previous year the returns show an increase of Y317,680.44.

Chinese Eastern Railway.—Despite all adverse circumstances, such as the pneumonic plague outbreak, the revolution, strained diplomatic relations between China and Russia, etc., the business conditions of the Chinese Eastern Railway are showing improvement from year to year. During 1911, the total amount of general cargo handled by the Railway Company reached 75,000,000 poods, which was an increase of 17,000,000 poods in comparison with the previous year. In the above mentioned figures are contained the following cereals:—

Beans	18,000,000 poods
Wheat	7,800,000 „

Flour	3,200,000	poods
Various Seeds	1,200,000	„
Kaoliang	1,000,000	„
Bean Cake	1,000,000	„
Bran	900,000	„
Millet	800,000	„
Oats	700,000	„
Barley	750,000	„
Buckwheat	47,000	„
Other Cereals	450,000	„

As the area of agricultural land in North Manchuria is considered to have been considerably expanded during this year, farming products have no doubt proportionately increased, so that the return of railway receipts for 1912 will eclipse that of 1911.

The Pensihu Railway.—The Metei Company of Manchuria has raised the sum of 1,700,000 taels towards the construction of the Pensihu Railway, which is intended primarily to develop the Chinese coal and iron industries. The plans are for the adoption of standard gauge and for the construction of nine railway stations.

The Aigun-Wenchow Railway.—Tutuh Soon Hsiao-lien of Heilungkiang has wired to Peking that Russia has despatched over twenty Russia surveyors to operate on the proposed Aigun-Wenchow Railway and also sent a number of engineers from the Chinese Eastern Railway Co. They declared that they will freely construct that line following in the steps of the Japanese construction of the Antung-Mukden Railway.—(*Chinese Report*).

TRAMWAYS

Shanghai Tramways.—The returns of the Shanghai Tramways (Foreign Settlement) for 12 months ended 31st December, 1912, are as under:—

	1912.	1911.
Effective Receipts (after deducting loss by exchange)	$797,832.04	$636,363.16
Passengers carried	40,734,233	27,257,250
Car miles run	2,747,088	2,241,113

The loss by exchange of subsidiary coinage for the year 1912 was $239,374.78 equal to 24.55% of the gross cash collected on the cars as compared with $168,848.31 equal to 22.93% for the year 1911.

For the week ended 1st January, 1913:—

	1913.	1912.
Effective Receipts (after deducting loss by exchange)	$14,455.20	$14,496.83
Passengers carried	704,124	699,477
Car miles run	47,974	51,175

The loss by exchange of subsidiary coinage for the week was equal to 21.97% of the gross cash collected on the cars as compared with 24.22% for the corresponding week last year.

For the week ended 8th January:—

	1913.	1912.
Effective Receipts (after deducting loss by exchange)	$16,315.35	$14,403.10
Passengers carried	789,872	710,991
Car miles run	51,363	51,299

The loss by exchange of subsidiary coinage for the week was equal to 20.34% of the gross cash collected on the cars as compared with 24.75% for the corresponding week last year.

For the week ended 15th January:—

	1913.	1912.
Effective Receipts (after deducting loss by exchange)	$14,733.20	$14,144.56
Passengers carried	714,639	695,753
Car miles run	50,489	51,625

The loss by exchange of subsidiary coinage for the week was equal to 20.57% of the gross cash collected on the cars, as compared with 24.77% for the corresponding week last year.

For the week ended January 22:—

	1913.	1912.
Effective Receipts (after deducting loss by exchange)	15,232.78	13,024.25
Passengers carried	737,034	646,161
Car miles run	49,445	50,754

The loss by exchange of subsidiary coinage for the week was equal to 20.67 per cent. of the gross cash collected on the cars as compared with 24.90 per cent. for the corresponding week last year.

Yokohama Electric Railway Co.—The Yokohama Electric Railway Company, at a general meeting of its shareholders recently held, decided on declaring a dividend of 8 per cent. per annum for the half year just ended, and this was followed by an extraordinary meeting at which a bill was passed for increasing its capital from 3,000,000 *yen* to 6,000,000 *yen*.

Shanghai Chinese Trams.—The Chinese Electric Tram Car Company was formed about eight months ago. There are five bridges to be built from the Shih-lu-pu to the Railway station of the Shanghai-Hangchow Railway and two bridges have been completed and there are three more bridges to be built, but these three bridges can be built when the rails are laid. Materials bought abroad are arriving at Shanghai, such as 156 rails, 93 rails for the sheds, and over 370 cases containing materials for electric batteries all of which are now in Shanghai. Rails inside the sheds for electric cars in front of the station of Shanghai-Hangchow Railway it was expected will be laid before the China New Year (Feb. 6th.) The electric poles, etc. will soon arrive at Shanghai.

Osaka Electric Railway Co.—Some time ago the company attempted to negotiate a loan from Samuel, Samuel & Co. through Masuda, a bill broker, but it failed on account of disagreement on terms, and the company next consulted Sale, Frazar & Co., but again it was not successful. As a final step the company has planned to import foreign capital in the name of the Electricity Trust Company with whom it operates. The president of the latter, Mr. Iwashita has approved the plan and at present he is negotiating with Samuel, Samuel & Co. through Masuda. The amount of the loan is put at one million yen with interest 7.5 per cent. or 8 per cent. including fees.

PERSONAL

Captain Pruneau of the French staff at Tientsin has been promoted to the rank of Chef de Battalion.

Mr. Crane has been appointed to succeed the late Mr. Edwards as representative of the Eastern Extension Telegraph Company at Peking.

Governor-General Forbes of the Philippines returned from furlough in January.

The death is announced at Hankow of Mr. W. Ostapenko, secretary to the Russian Municipal Council for about seven years.

Mr. G. H. Phipps, H. M. Acting-Consul at Kobe, was married to Miss Aline Purvis, youngest daughter of Professor F. P. Purvis, of the Engineering College of Tokyo, Imperial University, at St. Andrew's Church, Tokyo, on December 28, 1913.

Mr. F. M. T. Lange, Chief Electrical Engineer of Messrs. Samuel & Co., Shanghai, took over charge of the local office of the firm on December 25 as Manager during Mr. Keable's prospective absence.

Dr. E. Ohrt, German Consul at Nagasaki, returned to his post on December 23 via Siberia, after completing his furlough and visit home. Mr. R. Buttmann, who had been in charge of the Consulate during his absence, has been transferred to Shimonoseki as successor to Consul Müller.

Baron von Frankenstein, Councillor of the Austro-Hungarian Embassy, has been appointed Director of Commerce in London, and will leave for his new post early this year. He is most likely to be succeeded by Dr. Szent-Ivany von Lipto Szent-Ivan, who has been Secretary of the Legation at Bukharest.

It is reported that Lord Kilmarnock has been appointed to Tokyo as Second Secretary of the British Embassy.

Mr. Bela de Szentirmay-Darvasto, Austro-Hungarian Consul at Yokohama, has been promoted Consul-General and will remain in charge of the Consulate.

Mr. J. H. Laughlin, who was some years ago a very popular member of the American Embassy in Tokyo, has now been appointed as Secretary of the United States Embassy in London.

Prince Suleiman, former Sultan of Zanzibar who is on a voyage round the world, is expected in Japan shortly.

Mr. D. Crackanthorpe, First Secretary of the British Embassy at Tokyo who recently left for home on furlough, will not return.

Mr. E. M. Hobart-Hampdon, Japanese Secretary of the British Embassy, will soon leave for England on a year's furlough. It is said that Mr. Harold G. Parlett, British Consul at Dairen, will take the place of Mr. Hohart-Hampdon.

Mr. Butler, who has been acting as British Vice-Consul at Kobe, has been transferred to the Consulate at Tamsui.

Herr von Syburg, German Consul-General at Yokohama left for Berlin on January 4th by the Siberian route, to take up his new post as Minister to Abyssinia.

Mr. and Mrs. S. F. Mayers left Peking for Europe by the Siberian express on January 14. Mr. Mayers has been called home by the British and Chinese Corporation, whose representative he is in Peking, to give information to the Sextuple Group in London. Mr. G. A. Robertson will be in charge during the absence of Mr. Mayers.

Mr. Yoshida, Japanese Minister to Siam, was to leave for his post on January 30.

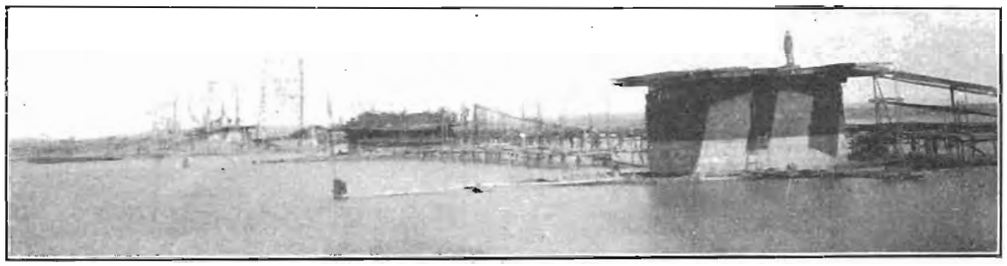
Sir Conyngham Greene, the new British Ambassador to Japan, and Lady Greene, were to sail for Japan on January 9.

News has been received in Tokyo that Dr. Baeltz, for a long time professor of the Medical College of the Tokyo Imperial University and a physician to the present Emperor in His Majesty's boyhood days, is now seriously ill in Germany.

THE RAILWAYS OF TAIWAN (FORMOSA)

A LINE THROUGH THE CLOUDS

In a recent lecture upon Taiwan (Formosa) Mr. Uchida, the Civil Governor, gave a brief history of the work performed by the Japanese in the possession since the cession by China. The record was an extremely gratifying one, and the island evidently has progressed more in the eighteen years that have elapsed since the Japanese occupation, then it did in all the preceding centuries. It is interesting to note that the population of Taiwan is about 3,400,000, of whom 100,000 are Japanese, while 120,000 are aborigines. The remainder are Chinese, mostly from Canton and Fukien. The production of sugar is one of the main industries of the island and the amount turned out is some 500,000,000 annually. Very successful experiments in growing hemp and cotton and in sericulture have been made.



TAIWAN RAILWAY.—THE ARKO LINE UNDER CONSTRUCTION

The harbour accommodation at Keelung and Takaw has been greatly improved. A comprehensive scheme of railway construction has been adopted and it is intended in this article to give a brief description of the work that has been done in this connection. It may be mentioned that the total mileage open to traffic up to August, 1912, amounted to 303.60 miles. These were made up as follows:—

The Main Trunk Line	247.30
The Tamsui Line	13.20
The Hozan Line	10.90
The Daito Line	22.40
The Arisan Line	8.80

In regard to the latter line, it was to have been opened for the entire length of 41 miles last month.

The 62 miles of rail between Keelung and Shinchiku had been constructed prior to the Japanese occupation, but after the cession, the Japanese Authorities practically relaid the track. The line was in the first instance put under the charge of the temporary Taiwan Military Railway Corps and later passed into the hands of the Civil Administration Department. In 1899, the temporary Taiwan Railway Construction Department was established, and this afterwards developed into the Railway Department of the Government of Taiwan. The Department has practically reconstructed all the old lines and has undertaken the entire management of the lines which had been more recently built.

In August 1899 it was decided to start the work of improving the main line already constructed and to construct a new line between Shinchiku and Takaw. This work was to be spread over 10 years and the sum of Yen 28,800,000 was appropriated for the purpose. Operations were begun at both the South and the North end. In view of the character of the country and the unsettled conditions, the Department is certainly to be congratulated upon finishing the whole line, and also the Tamsui and Hozan lines, by April 1908. The fact of railway communication being possible from the extreme North practically to the South of the Island has done a great deal, not only for the development of commerce, but also in the direction of pacifying the people.

The Daito line was projected for the purpose of developing the eastern side of Taiwan and is to connect Karenko and Bokusekikaku, a distance of 53 miles. The work was started in 1909 and was to be spread over 6 years. The amount appropriated for this construction was Yen 4,257,000. That portion of the line connecting Karenko and Hozan has been completed and opened to traffic, while the remainder is still under construction.

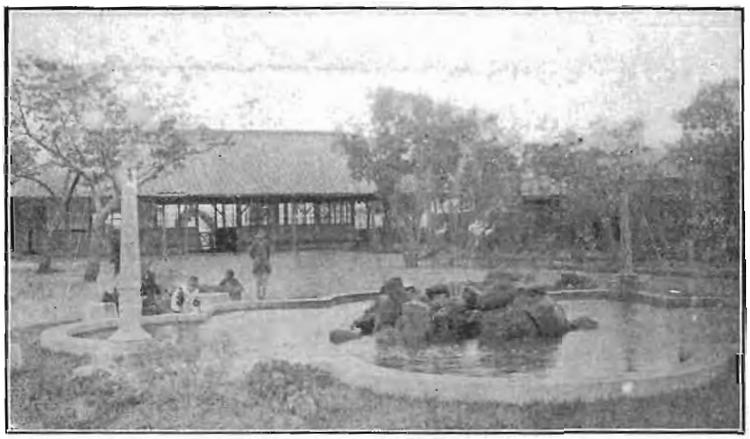
TAIWAN RAILWAY.—THE MOUNT ARISAN RACK LINE

The Arisan Line

The Arisan railway is one of most interesting lines in Formosa, and it might almost be said in the Far East. The line was undertaken by the Arisan Works Department of the Taiwan Government, and a well-informed critic observes that this mountain railway will elicit favourable remark from the engineering fraternity in many countries. The construction involved steep gradients, sharp curves, a picturesque spiral, and many tunnels and bridges. The entire railway, as already stated, will cover 41 miles, from Kagi to Mount Ari station (Nimandaira)—the latter point being 7,000 feet above sea level. From Kagi to Chikutoki, 9 miles, the grade is 1 in 50. From Chikutoki, Nimandaira is reached after a 32-miles zigzag climb up the mountains to 7,000 feet, the gradient being 1 in 20, or 5 per cent. Nearly the entire line (80 per cent.) is sinuous, the sharpest curve being 35 degrees To reach Nimandaira the railway must circle a peak spiral fashion. The spiral construction begins at 1,824 feet and ends at an elevation of 2,500 feet. Between Kagi and Mount Ari there are 70 bridges, 73 tunnels, and almost innumerable cuts. The Rinnai or forest railway is 18 miles long, is tortuous, and has a gradient of 1 in 16. This railroad is called the Mount Arisan line, Mount Ari lending its name to the railway as well as to the giant forests that are the objective point of the undertaking.

Importance of the Line

The exploitation of the valuable forest of Mount Ari is no new enterprise. Years ago a private company surveyed a line and commenced constructing a road. But the undertaking was abandoned after futile attempts to interest private capital. Then the Government was approached to take over



TAIWAN RAILWAYS.—STATION GARDEN AT HOKUTO

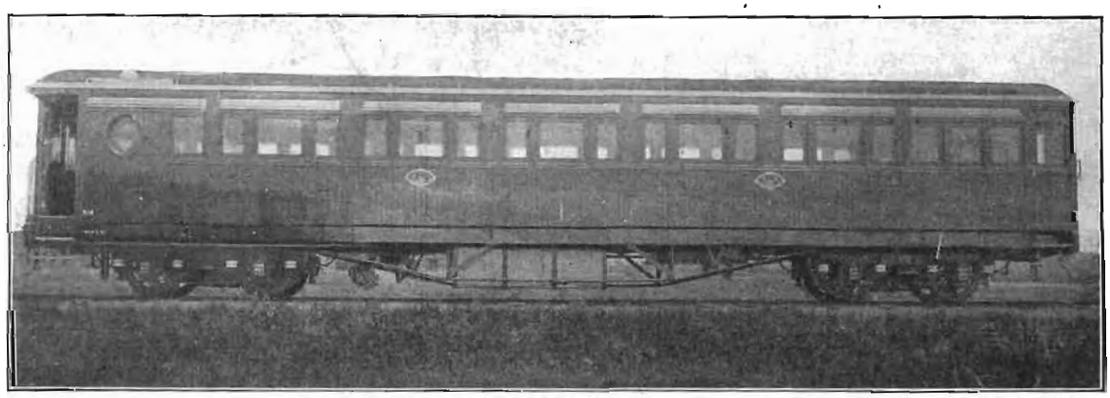
TAIWAN RAILWAYS.—CUTTING ON THE ARISAN RAILWAY

the property of the private concern and carry forward the work. After considerable discussion in the Imperial Diet an appropriation of $2,450,000 was made in 1910 for the Mount Ari forest exploitation. Practically the operation and property of the private company were of no value, and the work was started anew. The most capable engineers of the Government are directing the construction, and difficult obstacles are being rapidly overcome.

Aside from the extension of the frontier lines, no undertaking by the Formosan Government is more important to the island's development than the Mount Ari enterprise. Not only is it an important undertaking, but it is a picturesque one. The traveller reaches Mount Ari station now by sedan chair with the clouds way below him; above him is scarcely any demarcation between earth and sky. When this altitude is gained he looks upon a magnificent primeval forest, some trees of which are 2,000 years old, 135 ft. high, 65 ft. in circumference at the base, 25 ft. at the capital, with no branch visible until a height of 45 ft. Such trees as the *Chamaecyparis obtusa* (Hinoki), red *Chamaecyparis* (Benihi), and oak, forming the three useful species, may be taken as the chief object of the sylvan industry.

At Kagi, where this line begins, there will be erected an American sawmill—the Allis-Chalmers Co., Milwaukee, having recently been awarded a contract involving $150,000. The Lidgerwood Manufacturing Co., of New York, is furnishing a log-handling apparatus at a cost of $25,000. The entire railway was to be finished by January, 1913 when logs would be delivered from the forests of Mount Ari to the American-built sawmill at Kagi.

The appropriation for the line was Yen 3,480,000 and the construction was to be spread over 3 years, but, as already stated, completion of the line was expected early this year.



TAIWAN RAILWAYS.—FIRST CLASS DINING CAR

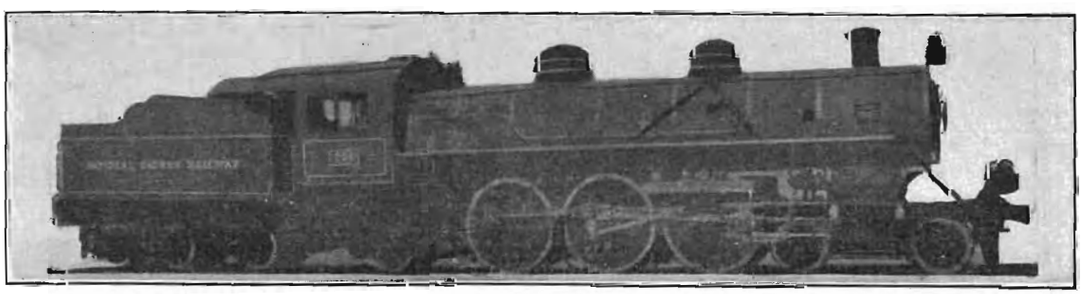
EXTENSIONS AND IMPROVEMENTS

The extensions and improvements that are projected are as follows:—

The extension of the main line from Kyukyokudo, the terminal point of the Hozan line, to Arko, the whole length of which is over 5 miles. The other line between Keelung and Taihoku (Taipeh) is to be improved by doubling the track. The appropriation for the former is Yen 2,300,000 which is to be spread over 3 years from 1911, and that of the latter Yen 1,026,200 which is to be spread over 3 years from 1912. Each of these works was commenced on the date arranged.

The traffic returns have made fair progress annually; for instance, the total revenue for 1911 was Yen 4,536,925 while the total expenditure for the same year was Yen 1,972,134, showing a profit of Yen 2,564,791.

The following is a table showing the revenue and the expenditure since 1908:—



TAIWAN RAILWAYS.—HIGH POWER PACIFIC (BALDWIN) LOCOMOTIVE

Year	Lines	Revenue	Expenditure	Profit (Loss marked X)	Income a day		Expenditure a mile		Average Profit (Loss marked ×)	
		Yen	*Yen*	*Yen*	*Y*	*S*	*Y*	*S*	*Yen*	*S*
1908	Main	2,715,829	1,449,226	1,266,603	27	342	14	590	12	752
1909	„	3,301,245	1,559,444	1,741,601	33	336	15	748	17	588
1910	„	4,053,214	1,732,767	2,320,447	40	931	17	498	23	433
	Taito	4,496	18,224	× 13,728	4	001	16	219	× 12	218
	Arisan	10,604	7,839	2,766	6	621	4	894	1	727
1911	Taito	19,983	80,048	× 60,065	3	940	15	783	× 11	842
	Arisan	24,629	22,338	2,291	7	647	6	936		711

NOTE:—By the main line is meant the line running lengthwise, Tamsui and Hozan lines.

LOCOMOTIVES AND ROLLING STOCK

The equipment is as follows:—

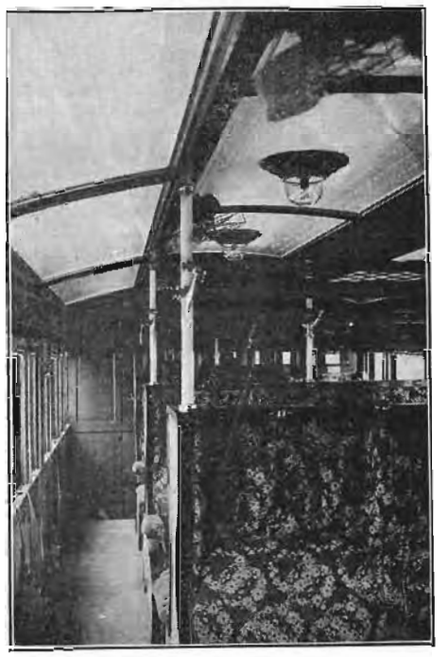
Locomotives	76
Passenger carriages	134
Wagons	1159
Total	1369

If classed by lines:—

Lines	Locomotives	Passenger Carriages	Wagons	Total
Main	70	127	1110	1307
Taito	4	3	35	42
Arisan	2	4	14	20
			Total..	1369

As an auxiliary means of communication, there are two light railways (hand car system) running between Horin and Pinan (86.8) and Kyukyokudo and Ako (4.4) making altogether 91.2 miles. Besides these, there are also private lines opened for public use, 168 miles, special service lines 429 miles, and private tracks (hand car system) 240 miles.

The Railway Hotel is in Daihoku, the capital of Taiwan. It is under the management of the Railway Department, and is thoroughly equipped in every way on up-to-date foreign lines. The surrounding gardens contain collections of trees and flowers indigenous to Taiwan, many of which are in full bloom throughout the year.



TAIWAN RAILWAYS.—FIRST CLASS DINING CAR

THE CENTRAL BANK

(*Continued from page 406*)

15. The Bank of China shall have one Director, one Vice-Director, 9 members of Committee and 5 superintendents.

16. The Director and the Vice-Director shall be "Chien Jen" (Nominated by the President), and the Members of the Committee and the Superintendents to be elected by the shareholders' society.

Shareholders, whose shares are not above 50, shall not be elected as members of the Committee of Superintendents.

The above shall not be in force before 100,000 shares have been sold to the public, and the members of the Committee and the superintendents shall be appointed by the orders of the Ministry of Finance.

17. The periods of office: The Director and the Vice-Director, 5 years; the members of Committee, 4 years; and the Superintendents 3 years. These officers may be allowed to continue after the expiration of their respective periods.

Within the period of their office, the Director and the Vice-Director shall not do other business besides the affairs of Exchange Bank and the Currency System.

Within the period of their office, the Members of the Committee and the Superintendents shall not be allowed to act as officers of other banks or companies.

18. The chief meetings of the shareholders of the Bank of China shall be two kinds as follows:—

(*a*) The ordinary shareholders' meeting.

(*b*) The provisional shareholders' meeting.

19. The ordinary shareholders' meeting shall be called by the Director once a year at the Head Office.

20. Should the Director think it necessary to discuss some important business he may call a provisional shareholders' meeting.

21. If the whole of the members of the Committee or the whole body of Superintendents, or more than 50 members of the shareholders' society with one hundredth of the amount of shares, request a meeting to discuss some important matter, a provisional meeting should be called.

22. A list of names shall be prepared 60 days prior to the meeting and the meeting can only be attended by the members who possess upwards of 10 shares.

23. In the meeting every member who possesses 10 shares shall be entitled to one vote: Above 100 shares each 50 shares shall be entitled to an additional vote.

24. When a member is unable to attend the meeting his representative shall be one of the members of the society.

The member who represents other members should not be allowed to cast for them more than 10 votes.

25. With reference to the forms used in filling reports, etc., by the Head, branch, sub offices and agencies the Bank of China shall request the Minister of Finance to fix them and to make detailed regulations of them.

26. If the Bank of China in its business should violate this law, or the regulations of the Bank, or have done anything contrary to the interest of the Government, the Minister of Finance shall interfere.

27. The Minister of Finance may appoint supervisors to supervise the affairs of the Bank.

28. The Bank of China shall according to this law draw out regulations which shall be decided by the Shareholders' society, and approved by the Minister of Finance. The same procedure shall apply in case of corrections, etc.

29. The regulations regarding the shareholders in this law shall take effect when 100,000 shares have been sold.

30. The law shall have effect from the date of promulgation.

REGULATIONS FOR COMMERCIAL BANKS

The following regulations regarding commercial banks have been presented to the Cabinet by the Ministry of Finance:—

(1) The bank notes issued by any bank shall not exceed sixty per cent. of its capital.

(2) Any banks that issue notes shall submit the bonds of Government Loans to the Ministry of Finance, and the amount of notes issued shall not exceed that of bonds submitted to the Ministry.

(3) The reserve of any bank shall be at least equal to a quarter of the notes issued and a quarter of the reserve shall be deposited in the Central Bank.

(4) The Government may put a limit to the issue of notes, beyond that limit no issue shall be allowed.

(5) In the case of bankruptcy the Government may sell the bonds submitted to the Ministry of Finance.

Regarding banks that have already issued notes, the following regulations shall apply:—

(1) Three months after the promulgation of the regulations governing the paper-notes the banks that have already issued notes shall inform the Ministry of Finance the total number of notes they issued: an amount of one-third of this number shall be paid in bonds of Government loans to the Ministry, which shall issue the same number of notes to the banks.

(2) Three months after the issue of this note, one-third of the old notes shall at least be exchanged back and submitted to the Ministry of Finance.

(3) Following the above system the other two-thirds of old notes shall be exchanged in one year.

FAR EASTERN RAILWAYS

CHINA

Shanghai-Nanking Railway

The following figures of traffic returns (approximately) for the week ended January, 25 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	50,314	10,509	60,823
1912....	44,452	4,625	49,077
Increase	5,862	5,884	11,746
Decrease	—	—	—

For three weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	174,397	35,809	210,206
1912....	189,848	16,646	207,494
Increase.	—	9,253	2,802
Decrease	$15,451	—	—

For the week ended February 1:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	55,014	7,830	63,744
1912....	50,601	5,809	56,410
Increase.	5,313	2,021	7,334
Decrease	—	—	—

For four weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	230,311	43,729	274,040
1912....	240,449	23,455	263,904
Increase	—	20,274	10,136
Decrease	10,138	—	—

For the week ended February 8:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	41,072	3,163	44,235
1912....	53,371	5,553	58,924
Increase.	—	—	—
Decrease	12,299	2,390	14,689

For five weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	271,383	46,892	318,275
1912....	293,820	29,008	322,828
Increase.	—	17,884	—
Decrease	22,437	—	4,553

For the week ended February 15:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	46,732	6,514	53,246
1912....	54,982	4,009	58,991
Increase.	—	2,505	—
Decrease	8,250	—	5,745

For six weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
	318,115	53,406	371,521
	348,802	33,017	381,819
	—	20,389	—
	30,687	—	10,298

The Hunan Line.—It is reported that some progress in the negotiation for a British loan of Tls. 10,000,000 between the Hunan Railway authorities and the China Development Corporation seems to have been made. The money is needed for the building of the railway from Chengchow to Ch'angtch, in Hunan. An Englishman has left Shanghai for that province to make a personal inspection of the line in question. If he should find it as described to him Tls. 4,000,000 will be paid over as a first instalment on his return.

The New Railway in Kwangtung.—The railway, built by Chinese engineers, and financed by the Chinese themselves, which will join Pak Kaai, the great port on one of the largest branches of the Canton river, to Hongkong by river steamer, has pushed its way some tens of miles further towards completion, and it is now opened for traffic as far as the city of Kongmun, which is only three miles from Pak Kaai.

Hsuchowfu-Tsingkiangpu Line.—It is understood that a party of engineers, Chinese and foreign, left Shanghai recently with northern Kiangsu as their objective. The visit is in connection with the projected railway from Hsuchowfu to Tsingkiangpu, and it is reported that their intention is to make the necessary purchases of land for the line if this can be done.

Szechuan-Hankow Line.—In Chengtu a public meeting has been held by the shareholders of the Szechuan-Hankow railway The shareholders decided to utilize their funds for the construction of lines in connection with the main line.

By the order of the Ministry of Communications Mr. Chang Li-ken has been despatched to institute a survey and an estimate of the railway between Shasi and Ichang; Mr. Tuan Mu and others are to construct the branch lines from Pinghsiang to Chang-shu-tung.

The Hukuang Line.—A correspondent writes to the *China Mail* from Canton as follows:—We hear that another section of the Canton-Hankow Line has been opened and to-day it is possible to get as far as Yingtak. There was some delay and difficulty in laying this line along the pass known as the Blind Boy's Pass, because the track was very rocky, and there was some tunnelling to be done. But whilst work went on slowly here, farther on, the line was pushed forward, so that when this difficult section was conquered, little delay was expected, and so it has turned out. Unfortunately the station at Yingtak is some distance away from the city. It appears that the west river—that is a branch of the North River, not the West River—is the cause of this. In other words, the line had to cross this river, and near the mouth, which is just opposite the district city, the river was too wide to be bridged. At any rate it was found to be much easier to run the bridge across farther up the stream, and so the line was carried along some distance from the city. Reports affirm that already the line is popular, and those who aforetime went by boat, and were compelled to creep along, are now able to go at a great speed, by comparison, though at present probably the fastest train does not travel more than from fifteen to twenty miles per hour. The report of the opening of this section of the line goes on to say that before the year has run its course the line will be opened all the way to the district city of Shiu Chow. Much of the track is already laid, and it remains only to link up these several sections, whereupon there will be a direct track from Canton to that district city.

A Chenchow correspondent wrote on December 18:—Mr. Dees and his party of 300 have passed through Chenchow on the survey of the Canton-Hankow railroad. From here the party goes to Kweiyangchow and down the Kwei River: there is some prospect that the railway will follow that river instead of the Lei; in any case the road will come to Chenchow, and that is a source of great satisfaction to all here.

Earnings of Chinese Railways.—According to the *Sinwanpao* the total earnings of the different Chinese railway lines were as follows:—

Railway Lines:—	$
Peking-Mukden	13,000,000
Peking-Hankow	12,400,000
Peking-Kalgan	2,800,000
Tientsin-Pukou.....	4,000,000
Shanghai-Nanking	2,600,000
Honan-Loyang	700,000
Kowloon-Canton	600,000
Chênting-Taiyuan	2,400,000
Tao-ching Railway	500,000
Kirin-Changchun	200,000
Chuchen-Pinghsiang	270,000

The Lotung Railway.—The first section of the Lo-tung Railway from Lo-yang to Tieh-men having been completed, the Director of the said Railway has arranged to run daily passengers and goods trains between these two stations, a distance of 100 Chinese *li*. The Lo-tung Railway Company, having decided to bring about the whole line to completion with the least possible delay, 480 *li* in all, has now employed additional staff in the Engineering Department. The Chief Engineer Mr. Hsu Wen-chong, may be remembered as the builder of the Kiangsu Railway, which was opened to traffic 3 years ago.

The *Asiatic News* reported early in February that there being deficiency of funds the Lo-tung Railway Company requests permission to contract a loan of £500,000 with a certain company in Tientsin.

Yeungkong-Kongmoon Line.—The progress of this line is being retarded by a quarrel about a bridge over the river between Sanui and Kongmoon. There has been a good deal of delay over the building of this structure, and the train does not run any farther than Kongmoon city, which is some four or five miles away from the terminus; that is, the Customs Station at Kongmoon. The river runs through this section. An influential body of men signed a petition, and sent it in to Headquarters, Canton, asking that the bridge be not allowed, but the reply was that the company was to see to it that the work of constructing the bridge was put through at once, for it is too late in the day to let the prejudices of the few in the vicinity hinder this important work.

The Lung-Tsing-U-Hai Line.—The Belgian Honanfu-Kaifengfu Railway Bonds were to be issued in Belgium on February 18. One million francs bargain-money was to be paid over to the Chinese Government simultaneously. China will use this amount to purchase the portions of railway near Honanfu which are being built by private enterprise.

MANCHURIA

Hsinmintun-Fakumen Light Line.—Governor Chang-hsi-lan is said to have been authorized to build a light rail line for military use between Hsinmintun and Fakumen. Engineers have been sent out to start a survey of the proposed line.

Kirin-Hailungcheng Line.—Mr. Chi-shih-min, chairman of the Kirin Industrial Guild, has mooted the project of constructing on share capital a railway from Kirin to Hailung-cheng via Panshih-hsien. He is reported to have succeeded in inducing Chinese capitalists in the South Seas to subscribe to two-thirds of the required capital. All that is left to be done is to raise the remaining third locally, and when this sum is raised, which is, however, considered no easy task in view of the prevailing stringency in the money market, the promoters intend to start work without delay.

South Manchuria Railway.—January, 1913, was the most prosperous month for the S. M. Railway. The traffic receipts alone averaged Y.87,748 per day, being an increase by Y.1,108 over those for the corresponding month of last year. The average mileage receipts reached Y.126⅛ per day. Owing to the Chinese New Year Season, the returns for the last decade of January showed a slight decrease, gaving a daily average of Y.81,866, which was, however, still larger than the corresponding period of last year by Y.1,162.

JAPAN

Tokaido Double Line.—A dispatch from Nagoya says that the construction of the iron bridge with the double line over the River Kiso having been completed the section will be put into active use for traffic immediately. Now the only section with the single line on the Tokaido line left is the iron bridge over the river Tenryu. But as the bridge over the river Tenryu is expected to be completed this March the whole of the Tokaido line will be doubled in the near future.

MONGOLIA

Russian Military Railway.—Russia has constructed a military railway from Harkatu to Urga and the whole line is divided into four sections, on each of which a barrack has been erected.—*Chinese Report.*

CHOSEN (KOREA)

Seoul-Gensan Line.—Sixty-one miles of the railway to Cholwon, a station on the new line between Seoul and Gensan (Wonsan) have been completed and opened to traffic. At the Gensan end of this line about 10 or 15 miles of road are now being operated, and vigorous work is being prosecuted on the intervening route. It is expected that through communication between Seoul and Gensan will be available for trains by November, 1913.

STRAITS SETTLEMENTS

Straits Settlements Railways.—Beginning on January 1, 1912, the railways of the Straits Settlements came under the management of the Federated Malay States Government. The terms called for a lease of 21 years at an annual rental of $95,200, subject to septennial revision. It is proposed to sell the railways to the Federated Malay States Government, and a joint committee has been considering the question of the price to be paid.

SIAM

Siam Railways.—The following from Mr. Williamson's annual report on the Siamese Budget states that as regards the Northern Railway, it will be seen that the expenditure is estimated to be Tcs. 2,650,000 against last year's figure of Tcs. 1,315,000—that is to say, the allotment has been rather more than doubled. The explanation of this is that it has now been decided to push on with the construction of the line in question as far as Chiengmai, the chief town of Northern Siam. It will be remembered that in previous reports it was stated that, owing to the difficult and less-paying nature of the country which the railway had then reached, it had been arranged for construction to be temporarily suspended when the line had advanced to a place called Dene Chai, about 223 kilometres south-east of Chiengmai. This was done in the interests of railway finance, in order to prevent any serious diminution in the dividend paid by the line; for it is obvious that a rapid and continuous extension through the less thickly populated parts of the country must, unless time is allowed to develop traffic, adversely affect the dividend-paying capacity of the whole railway. The necessary period for this purpose having now elapsed, it has been deemed opportune to continue the work of construction northwards: hence the increased allotment this year, which is made out of the unexpended balance of the last loan of £3,000,000 taken in January (1907). For the main line of the Southern Railway, which is being built out of the £4,000,000 loan arranged for at the time of the Anglo-Siamese Treaty of three years ago, there is also an increased provision of over 2 million ticals—the allotments for the current year amounting to the large sum of Tcs. 8,630,000. In the case of the branch lines of the Southern Railway, a sum of Tcs. 1,200,000 odd is shown for the first time as expenditure chargeable to loan funds, and a word of explanation may be offered as to this. These lines, as stated in last year's report, have hitherto been constructed out of the money received from the Federated Malay States Government in repayment of the loans formerly granted by Siam to the ceded States of Kedah, Kelantan and Perlis. These loans (to the amount of about 5 million ticals) having been made by the Treasury, were paid back to the same source when refunded. The branch lines have, therefore, up to the present, been constructed from Treasury Reserve funds. Their total cost, however, is estimated at nearly 8¼ million ticals, while the sum available out of the refunded loans amounts to about 5 million ticals only, as already mentioned; hence it became necessary, on the exhaustion of the latter (as has taken place this year), to find some other source from which the balance of the cost of construction could be met. It has accordingly been arranged, for the time being, to provide the money out of the remainder of the loan funds still in the hands of the Government—the intention being to raise a fresh loan, at some future date, to cover this expenditure and to meet the further sum required to complete the Northern line to Chiengmai.

SIBERIA

The Amur Railway.—The Tsar has addressed to the Governor-General of the Amur Region a message of congratulation on the progress of construction of the Amur Railway, and has expressed his thanks to all Russians engaged on the works. Credits amounting to over 750 million roubles (£75,000,000) have been voted for this enterprise during the last five years. There is reason to believe that the railway is expected to be completed in 1915, or, at latest, in 1916. The section as far as Blagoveshchensk will probably be opened for traffic in the course of this year.

TRAMWAYS

Shanghai Tramways. (Foreign Settlement.)—The returns of the Shanghai Tramways (Foreign Settlement) for month ended January 31, are as under:—

	1913.	1912.
Effective receipts (after deducting loss by exchange)	$68,406.02	$60,877.06
Passengers carried	3,325,303	3,013,019
Car Miles run	223,899	226,601

The loss by exchange of subsidiary coinage for the month was $16,579.04 equal to 20.82% of the gross cash collected on the cars as compared with $18,337.62 equal to 24.84% for the corresponding month last year.

The returns of the Shanghai Tramways (Foreign Settlement) for the week ended January 29 are as under:—

	1913.	1912.
Effective receipts (after deducting loss by exchange)	$ 15,176.55	$ 13,216.87
Passengers carried	743,932	658,456
Car miles run	50,350	51,124

The loss by exchange of subsidiary coinage for the week was equal to 21.38 per cent. of the gross cash collected on the cars as compared with 25.11 per cent. for the corresponding week last year.

For the week ended February 5:—

	1913.	1912.
Effective receipts (after deducting loss by exchange)	$18,120.54	$14,535.09
Passengers carried	898,812	720,045
Car miles run	55,552	51,191

The loss by exchange of subsidiary coinage for the week was equal to 21.50% of the gross cash collected on the cars as compared with 24.67% for the corresponding week last year.

For the week ended February 12:—

	1913.	1912.
Effective receipts (after deducting loss by exchange)	$ 15,602.71	$ 14,240 77
Passengers carried	745,213	697,692
Car miles run	47,947	51,852

The loss by exchange of subsidiary coinage for the week was equal to 22.56 per cent. of the gross cash collected on the cars as compared with 23.02 per cent. for the corresponding week last year.

For the week ended February 19:—

	1913.	1912.
Effective receipts (after deducting loss by exchange)	$ 15,210.90	$ 15,655.66
Passengers carried	750,250	774 811
Car miles run	50,661	50,544

The loss by exchange of subsidiary coinage for the week was equal to 22.79 per cent. of the gross cash collected on the cars as compared with 24.59 per cent. for the corresponding week last year.

A Hankow Tramway.—The *Ta Hua Pao* reports that a tramway car company has been organized at Hankow and that orders have already been sent to Shanghai for the purchase of material.

Peking Tramways.—It is reported that the Peking Tramway Company has raised a loan of two million francs from a French Bank.

A WORD ON THE KAILAN COAL-MINES

[BY R. R. G.]

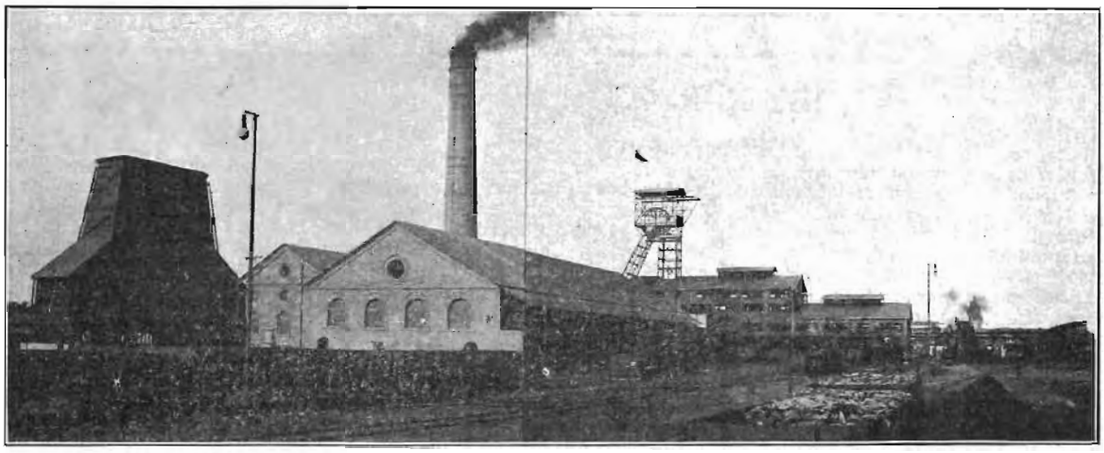
In a previous article the writer had occasion to discuss the latent possibilities of the port of Chinwangtao, and, incidentally was compelled to give a short account of the Kailan Mining Administration from the date of its inception until now. In the present article it is proposed to discuss some of the many industries springing from this Kailan Mining Administration, but first we must run over old ground and find out what we can about this mysterious Administration of apparently mushroom growth. We know it is more or less interested in Coal-Mining. We are told it is interested in many sorts of bricks. Upon enquiry we also find it operates in tiles and fireclay and pipes. It has a line of freight-passenger steamers besides; and yet in spite of its obviously great dynamic energies, we are strangely unfamiliar with the word and cannot help feeling uncomfortably ignorant of the dynamo from which all these wonderfully active, wonderfully new, yet wonderfully ubiquitous industries spring. To dissipate these feelings we must wander back some thirty-four years over the hills of time, whence we can observe the story of earlier Chinese mining meandering slowly through autumnal years until it purples away into yet more misty obscurity.

Prior to that date Chinese Coal Mines were only scratched on the outcrop, they were not treated scientifically for the very simple reason that the natives of the day had no facilities for modern mining. Their commercial instincts told them rightly enough that "black stones" had some calorific value. Accordingly they searched for them, found them all along the Kaiping coastal district, and dug up as many of them as they could with the miserable appliances at their disposal. Beyond that they merely sat down satisfied more or less at having accomplished so much, but wholly unaware of the huge unsuspected potentiality which lay like the genii of the story books bound and black and mighty beneath their miserable mortal feet. Such being the circumstances, can we not imagine the original owners' satisfaction when a certain Chinese gentleman named Tong King-sing came forward in 1878 and offered to buy these putative worked out Mines. It was his intention, under the patronage of the late Viceroy Li Hung-chang, to establish a mining company composed entirely of Native investors. With their money he proposed to work the Coal district not as heretofore by scratching the outcrop only, but to mine this time altogether in accordance with European methods. Thus it was, in 1878, that the old Chinese Mining Company uttered its new-born cry: and for the next twenty years its Chinese nurses looked after its well-being more or less successfully. There is no necessity for us to follow all the changes and chances of this period of adolescence beyond observing that it contrived to struggle along as a purely native concern until the fatal year 1900—the year of the Boxer outbreak. Then like many another of its kindred institutions it passed into foreign hands, hands which alone in China seem able to put big undertakings upon a firm financial footing, and to staunch the ebbing life-blood of a constantly leaking expenditure. As these hands are so well able to look after it, we will leave it for the time being, whilst we turn to contemplate a similar company, also operating in Coal, also composed entirely of native investors, also working altogether on European lines, which sprang into existence a few years later. Its name was the Lanchow Mining Company, Limited, and the history of its birth bears a striking resemblance to that of the old Engineering & Mining Company. True, its run of life under purely Chinese Administration was not of such long duration, nor did it enjoy the privilege of prearrival, of being the first Company on the scene. But despite these drawbacks its life had begun in the land of cheap labour, in the land where even Governments seem able to carry on the work of administrating without the aid of money, in the land where wonders will never cease, and where prophets are ever wrong; so that instead of being adversely affected by damaging competition, the Lanchow Mining Company was able to extend its business and actually to compete with rivals already well established. One of these must necessarily have been the Chinese Engineering & Mining Company, seeing that both Companies were engaged in the same industry, and were furthermore situated in closest proximity to one another. Therefore it was wisely decided to put a stop to any trade rivalry by operating both concerns conjointly through one Administration to be named hereafter the Kailan Mining Administration, with its head quarters at Tientsin.

THIS PHOTOGRAPH WAS TAKEN WHEN DR. SUN YAT-SEN VISITED THE MINES AT TONGSHAN ON SEPTEMBER 24, 1912
MAJOR W. S. NATHAN, THE GENERAL MANAGER, IS SEEN BEHIND AND TO THE LEFT, WHEN LOOKING AT
THE PHOTOGRAPH OF DR. SUN YAT-SEN. MR. A. DOCQUIER, ENGINEER-IN-CHIEF
IS ON DR. SUN YAT-SEN'S RIGHT WEARING A HAT

When this scheme crystallized from possibility into fact a short while ago, the last word in the histories of both Companies had been written, and the curtain was immediately rung down upon both their old independent names. In their place the Kailan Administration is now in front of the curtain and if we listen attentively to its epilogue we shall probably hear a great deal about the follies of competing with friends, and a great deal more about the advantage of maintaining the price of Coals.

So much then for past histories, we can now take a trip down to Tongshan and see for ourselves the big, black, busy chimneys, the grimy coolies, the coal trucks, the head-gear of each mining shaft, the dumps of slack, and the hundred and one other items which make up the coal-mining picture all the world over.



KAILAN MINING ADMINISTRATION.—THE TONGSHAN COLLIERY

We must not, however, go away with the idea that Tongshan is the only place in which the Administration has interests. On the contrary it has mines at Machiako, at Chaokochwang as well as at Linsi. At Machiako there is one shaft. At Chaokochwang there are two shafts. At Linsi there are two shafts, and at Tongshan four. All these places are in the Kaiping Coastal district midway between the ports of Tongku and Chingwangtao with which they are connected by the Chinese Government railway system. At Tongshan there is an electrical installation for pumping and lighting which is reputed to be one of the finest in the East. It cost considerably over a Million Dollars (Mex.) and its boiler house is complete with 17 Cornwall-Galloway Type boilers. The surface of the mine is lit by 48 arc lamps and by 300 glow lamps. Underground there are 5 motor-driven centrifugal pumps having an individual capacity of 1,200 gallons per minute against a head of 750 feet.

At the time of writing the output of coal from all the mines is about two million tons per annum, and this output could easily be exceeded if local consumption demanded that a further acceleration should be made. The various qualities of the coal obtained are expressed by the following nomenclatures:—

Navy Lump, Loco Lump, Linsi Lump, No. 5 Slack, No. 1 Slack, No. 2 Slack, and Special Coke.

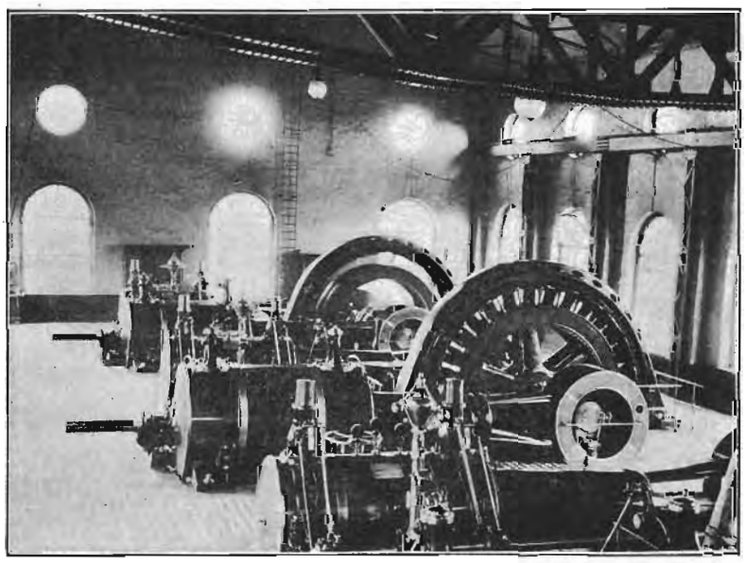
Each of these qualities, though perhaps unfitted for other purposes, is unrivalled for the specific uses to which it is customarily put.

Take No. 5 Slack for instance. This is undoubtedly a super-excellent Slack coal, but its chief advantage is its adaptability to the manufacture of an excellent coke. Again, Navy Lump is the finest coal for industrial purposes to be found anywhere East of Suez. It is nearly smokeless and gives a very small percentage of ash. It is often used for Naval purposes, but its supply unfortunately is not without limit.

For railway work and bunkering, Loco Lump is now the premier coal in the North China Market. It is highly bituminous and for raising steam it can show the most excellent results.

But there is one little fact which is sometimes overlooked by foreigners in China.

Strange as it may sound to them, there is an indigenous race of men living there with sallow faces and apparently inverted tastes. One of these apparently inverted tastes has imbued these strange men with a particularly strong sense of the advantages of buying Slack coal. They find it excellent for their various purposes, and it is moreover so remarkably cheap. Accordingly a large market in Nos. 1 and 2 Slack has sprung up, and enormous quantities of this coal are sold annually in increasing quantities until Kailan Coal may be said to shed a glow of warmth upon North China in defiance of the Lady Winter who spreads her ermine cloak down from the North in vain.

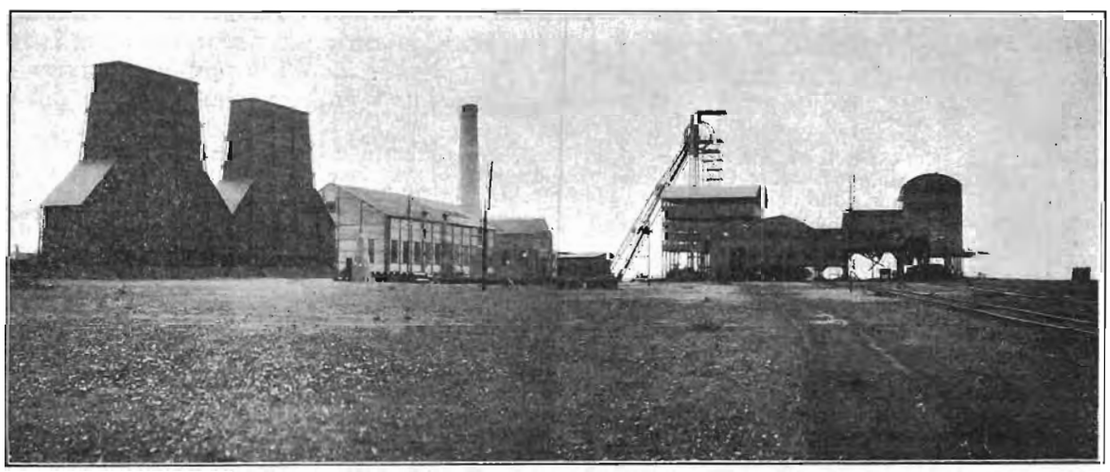


KAILAN MINING ADMINISTRATION.—THE POWER HOUSE AT TONGSHAN

Up to this point we have peeped at Kailan Coals, but have not touched upon the Administration's other products although several of these deserve more than a cursory mention.

To begin with, there are the fireclays; these obedient to Geology's unfathomable laws are found in close association with the coal seams, with a sufficiency outcropping upon the Administration's property to justify the boast, that their stock is almost inexhaustible. In class too they are declared by experts to be excellent, resembling in appearance the Stourbridge Clays of England, but reputed to be of even better quality. Next we turn to the firebrick factory at Tongshan, with another subsidiary factory at Linsi. The factory at Tongshan is quite one of the finest in the East. It is entirely up to date, and at present is putting out approximately 50,000 tons per annum. Were it deemed advisable to work at fever pitch there is no reason to doubt that this output could easily be doubled, for the equipment is quite capable of handling 100,000 tons per annum without straining the Administration's plant or the writer's reputation for veracity.

All up and down the Pacific Coast-lands, through contract after contract these bricks are strewn; here a few in Singapore; there half a million in San Francisco. They will tell their tale to the sons of Unborn Empires in future days to come. Then, when Tientsin shall have become as old, as dead, and as venerable as Babylon is to us now, some antiquarian may stumble across a K. M. A. brick, and with ecstasy will read upon it not only the hieroglyphics K. M. A. but also the more important message of progress which white men brought to far Cathay at that long forgotten period. But there is no necessity for us to look two or three thousand years ahead; for the moment we are more concerned with things nearer our own times amongst which we might mention tiles. The Kailan Mining Administration makes tiles, and makes earthenware pipes besides. In both these commodities a steadily increasing trade has been established, and the busy grinding mills or smoking kilns at Tongshan are a reminder that yet more activity may be expected when the outside world shall become better acquainted with these latest products of the Kailan Mining Administration.



KAILAN MINING ADMINISTRATION.—THE LINSI COLLIERY

the currency. With that scheme he was sent abroad to confer with the financial experts of the Powers participating the proposed loan and at the conferences held at London, Paris and Berlin it was quickly acknowledged that he was a man of high attributes and Sir David Barber, Prof. Jenks and others acknowledged that he should rank with the foremost experts on currency matter in the world. When Yuan Shih-kai was made premier just prior to the fall of the Manchu Dynasty Dr. Chen was given the post of Vice-Minister of Finance, but he ultimately joined the Republicans and became their first Minister of Finance, a desperate task in the latter days of the Revolution. Dr. Chen devised the patriotic loan, and arranged a scheme of finance which would have enabled the Republicans to carry on the war for a considerable time without foreign assistance.

Dr. Chen went to America to attend the International Congress of Chambers of Commerce, at which he represented China. He also proceeded to San Francisco to select a site for the Chinese Government building at the Panama Exposition in 1915. On that occasion, the Exposition Authorities and the people of California extended to Dr. Chen a great welcome. Both the Exposition Authorities and the Civic Authorities of San Francisco gave official luncheons, and a military escort was provided to accompany Dr. Chen from the San Francisco Hotel to the Exposition grounds, where the ceremony of selecting a site for the Chinese Government building took place. A military review was held in honour of the occasion, and when the flag of the Republic was hoisted upon the site, a salute of 21 guns was fired from the fort close by. This, perhaps, was the first salute given by a foreign Power to the new Chinese flag. Huge crowds attended the ceremony, and the utmost enthusiasm and good-will prevailed.

From San Francisco, Dr. Chen proceeded to Washington to study the Auditing Department and also the President's Commission for Efficiency and Economy. Thence he proceeded to England, France and Germany, and spent about one week in each country, investigating the working of the Auditing Department. In England, Dr. Chen was greatly impressed by the efficient, practical and business-like methods adopted in the Auditing Department, while the French and German systems impressed him by their scrupulous formality and methodical routine. He believes that the American method resulting from the investigations of the President's Commission of Efficiency and Economy, under such an able man as Dr. Cleveland, will give to the world the most perfect of Auditing Departments.

DR. CHEN CHIN-TAO

While Dr. Chen was in America, he was offered by cable the position of Auditor General for China, and it was because of this that he prosecuted the investigations referred to. On his return to China, he was rather disappointed that circumstances did not afford him an opportunity to carry out the ideas which he developed as a result of his studies abroad. In consequence, Dr. Chen desired to resign his position and to turn his attention to private business activities, but it will be generally hoped that the reorganization of the highly important Auditing Department will be undertaken by the one Chinese publicist who is beyond all doubt eminently qualified to carry out the work efficiently and successfully.

THE LOCOMOTIVE WORKS OF HENSCHEL & SOHN AT CASSEL.

In the July issue of the FAR EASTERN REVIEW appeared an article descriptive of the Locomotive and Machinery Works of Henschel and Sohn at Cassel (Germany). We are now enabled to supplement the information then given and to give illustrations of several types of engines recently furnished by the Henschel Works. Of special interest, in view of the fact that the Tientsin-Pukow Railway is now in active operation and has cut down the period of time necessary to make the journey from Shanghai to Peking by about one half, is the illustration of the 4:6:0 passenger locomotive supplied for this line.

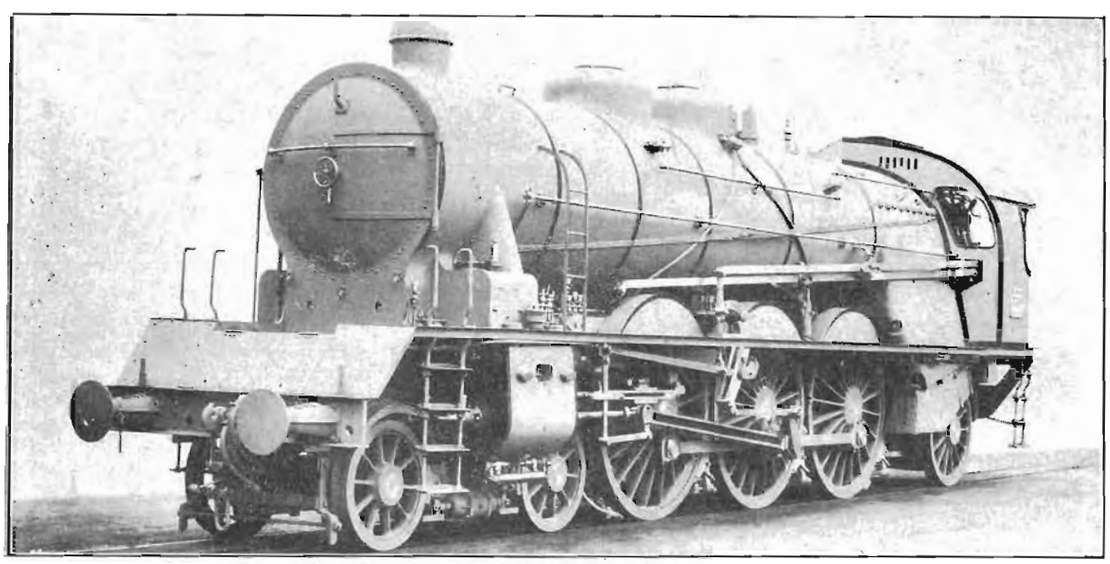
It is of interest to note that the output of the Henschel Works has reached 12,000 and that the annual capacity amounts to over 800 locomotives. The Works are kept operating at high pressure notwithstanding the increases made in the capacity.

In the July article it was mentioned that Henschel and Sohn supplied most of the locomotives to the Prussian State Railways and exported considerable numbers of engines to Russia, Italy, France, Roumania, Servia, Denmark, Turkey, Egypt, the Argentine Republic, Brazil, Chili, Mexico, Japan and China. To this list should be added Siam, Java, Cuba, Spain, Portugal and Holland and there is a constant extension of the field of the activities of the Works.

Regarding the installation of the Works the shops are now supplied with power and light by two electric power stations with an aggregate of 8,700 H.P., 510 electromotors drive the machine tools, and there are 46 travelling cranes, 65 turning cranes, 20 elevators, 45 traverses and 20 turntables. The boiler shop is equipped with 3 hydraulic flanging presses and 8 hydraulic and 2 electric riveting machines.

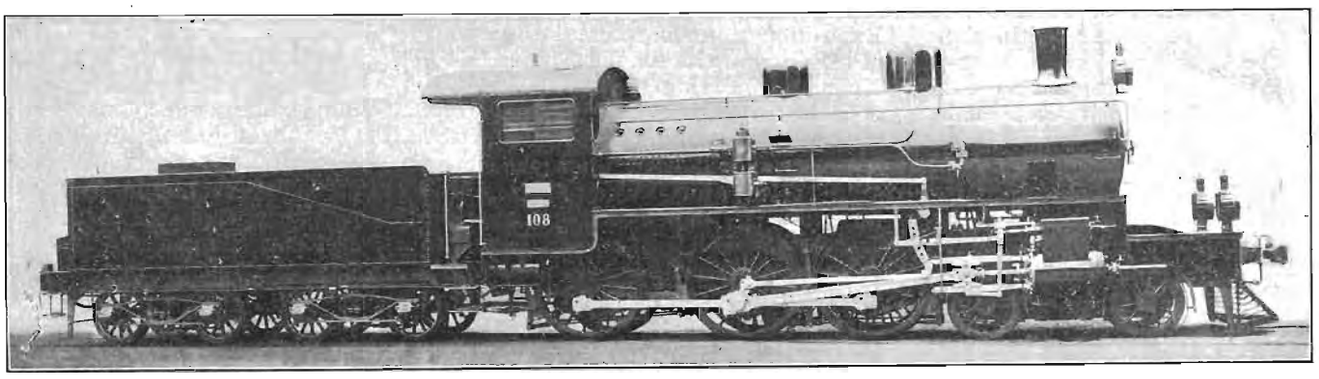
The work shops also contain 46 annealing, welding and hardening furnaces and 350 forges. The smithies are fitted with 40 steam hammers.

The accompanying are illustrations of notable engines with drop weights up to 4½ tons recently turned out by the Henschel Works:—

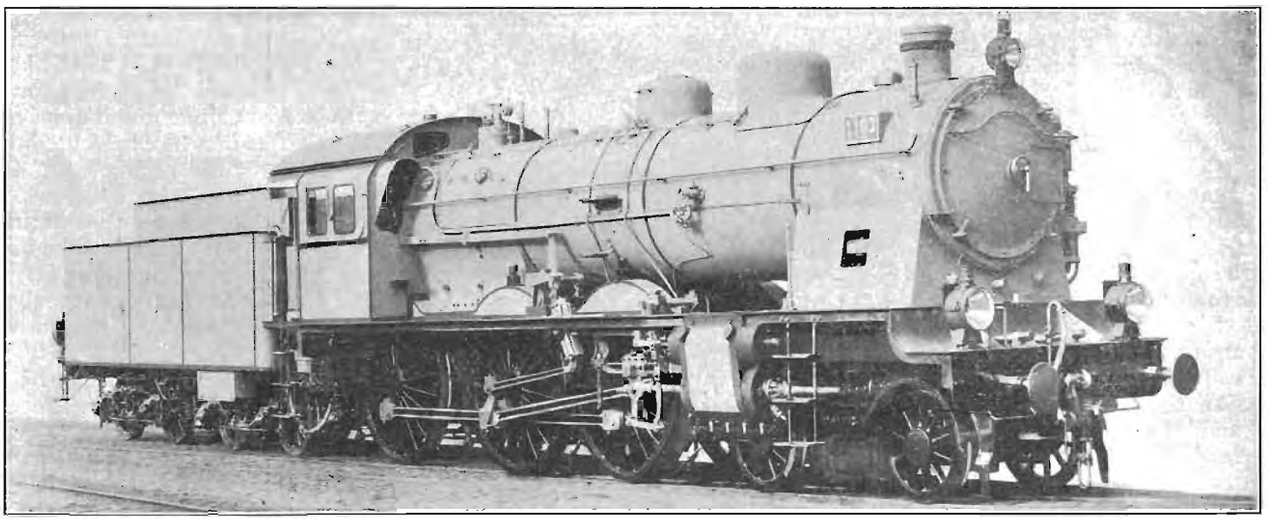


4:6:2 Four-cylinder Superheated Steam Express Locomotive "Pacific," delivered to the Paris-Lyon-Mediterranean Railway

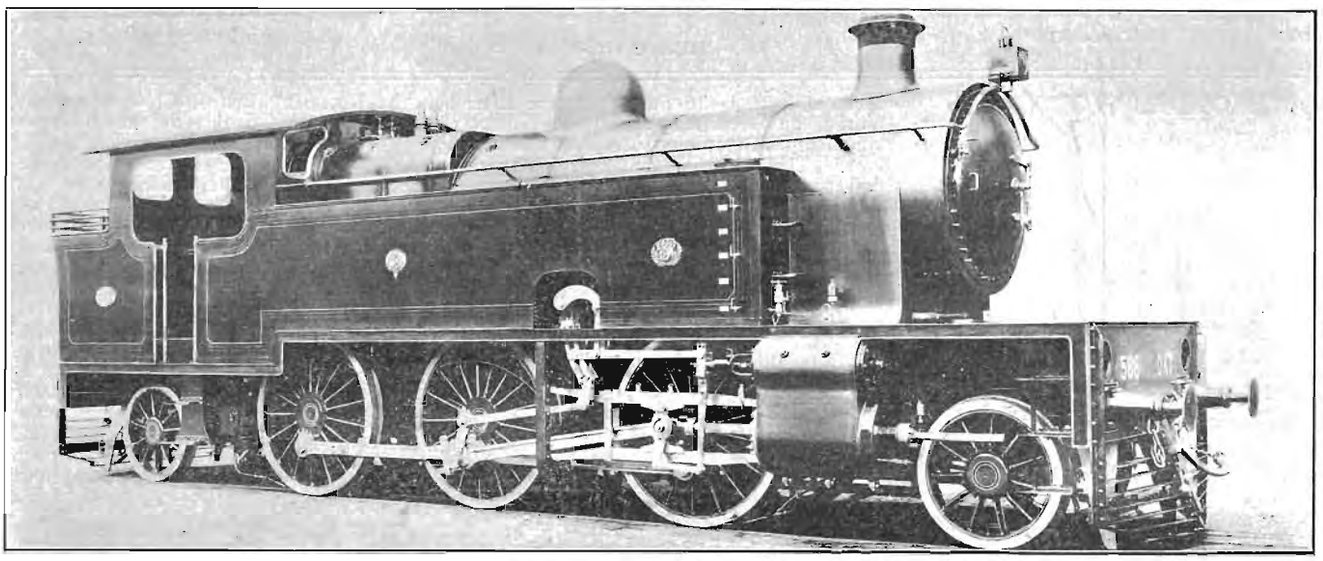
The Locomotive Works of Henschel & Sohn at Cassel



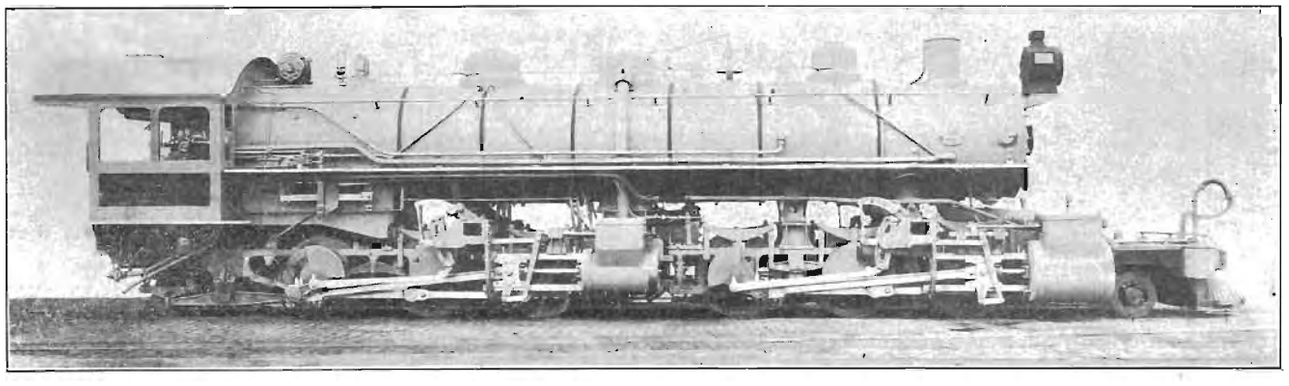
4: 6: 0 Passenger Locomotive with 8-wheeled tender, delivered to the Tientsin-Pukow-Railway



4: 6: 0 Four-cylinder Superheated Steam Compound Locomotive, delivered to the Prussian State Railway



4: 6: 0 Tank Locomotive, delivered to the Egyptian State Railways



2: 6: 6: 2 Mallet Goods Locomotive, delivered to the Brazil Railway Co.

FAR EASTERN RAILWAYS

THE TIENTSIN-PUKOW RAILWAY

Official Explanation by the German Authorities Connected with the Northern Section

A statement with regard to the Tientsin-Pukow Railway has been forwarded to us by the German authorities interested in the Northern Section for publication, and in view of the importance of this line, combined with the varied character of the statements that have from time to time appeared in connection with the work on both sections, to say nothing of the element of competition that has been injected into the matter, we are glad to give it space. It is only fair to state that when the Engineer-in-chief of the Northern Section was written to by this journal on Dec. 29th, 1912, requesting the usual engineering information, the following paragraph appeared in the reply received under date of Jan. 14, 1913:—

"In reply I regret to say that it is quite impossible for me to furnish you with such a description now. Quite apart from the fact that I am far too busy at the present moment, such a description coming from me would necessarily be a very one-sided one and not in justice to your readers."

The statement and figures are as follow:

"Since the opening of through-traffic on the Tientsin-Pukow Railway, a number of articles have appeared in the press comparing the method of construction adopted by the German and by the British line.

"As is usually the case with non-experts, the comparison is directed chiefly to those parts of the construction which impress one easily, namely to the buildings.

"The Northern Section has been praised on account of the appearance of the station buildings, and fault has been found with the modest exterior of the stations of the Southern Section. Others again have words of praise for the Southern Section pointing out that ornamental designs have been placed aside in the interest of economy, whereas the Northern Section has been blamed for lavish use of money.

"To explain the difference in question, it is necessary to go into detail.

"For a distance of 350 km., no stone was available for construction purposes on the Northern Section. The enormous quantities of stone ballast necessary for so long a distance would have to be brought down from the Tongshan or Peking hills with large expense and equal loss of time.

"For this reason, the Northern Section decided to make their own ballast and erected for this purpose 21 rotary brick kilns along the projected track. In these kilns the raw material was burnt to clinker. This was then broken to the required size and used as ballast. The success of this measure was complete, and the quality of this ballast beyond all expectation. This artificial ballast is, indeed, harder than the natural lime stone ordinarily used as ballast in North China. Although it has now been on the line for a period of three years, submitted to a heavy traffic of construction-, goods- and passenger-trains, it does not show the slightest sign of tear and wear.

"But what had that to do with the buildings? It had indeed a very considerable influence on the ornamental exterior of these buildings. These very same kilns, erected primarily for the manufacture of ballast, simultaneously turned out the whole of the bricks and tiles employed for the walling and roofing of the houses.

"The up-to-date brick kilns that were adopted and the enormous quantities of stones burnt for packing as well as for construction purposes enabled a handsome red brick to be manufactured at one-third of the customary price paid for the common Chinese blue brick.

"The following figures will best show the saving that was effected by the Northern Section using for all roofing their self-made roofing tiles in preference to corrugated iron; a square meter of roofing of corrugated iron would have come to M 2,25, whereas a square meter of their tiled roofing cost them as follows:—

1—made of interlocking tiles	M	0.60
2—made of ordinary pan tiles	M	0.96
3—made of half round tiles	M	1.08

"Under these circumstances it would have been an unanswerable squandering of money on the part of the Northern Section, had Chinese blue bricks or corrugated iron been employed.

"Even the small platelayer's houses were built more cheaply by using the self-made attractive looking red tiles instead of corrugated iron.

"After all, it must be borne in mind that there are also other advantages speaking for the use of high tiled roofs. Iron roofing means cold rooms in winter and warm rooms in summer, whereas tiled roofs have the opposite effect; besides, the flat iron roof makes it impossible to utilise the space below the roof. On the other hand, the tiled roof, although its construction does require more timber, permits of using that space for quarters for Chinese employes.

"In the case of the Southern Section, the circumstances were entirely different, because they possessed quarries from which a sufficient supply of suitable ballast could be obtained. With them, it would therefore have been deliberate waste to erect brick kilns solely and exclusively for the purpose of manufacturing their own red bricks and tiles for their buildings, not to mention the expensive procuring of tiles from Shanghai.

"That is one of the reasons why the Southern Section had to erect buildings of a plainer character.

"Another cause why the edifices of the Northern Section are more pleasing to the eye, is the fact that some of them have two and even more stories. And also here, the *apparent* extravagance can be explained in few words.

"The course of the Northern Section runs from Tientsin to Techow and from Tonghsien to Hanchwang in the vicinity of, and parallel to, the Grand Canal. This dangerous neighbourhood made itself felt to the engineers when the canal dikes gave way in 1911. In anticipation of such occurrences, the level of the track had everywhere been placed half a meter above the top of the banks of the Canal. To this height, the elevation of the station platform must be added so as to arrive at the level of the groundfloor of the station buildings. It will thus be seen that their foundations had to be very deep or high as one may call it, as they had to be sunk right down to the grown ground, for the reason that the earthwork was newly raised and unsettled and, besides, at any moment exposed to the dissolving and scouring action of floods from the canal. Any attempt at saving in this respect would have impaired the strength of the buildings very seriously.

"Deeper still had the foundations to be sunk on that 50 km. long section of the line which is exposed to the floods of the Hwangho. What was more natural than to use such deep and consequently very strong foundations to erect on them two stories under one roof, instead of having to build for a single storied house equally deep foundations and a roof, but both of double the lengths?

"It was therefore only the wish of economising wherever possible, which caused the Northern Section to erect such high structures.

"The ornamentation of the buildings is of quite a plain character, attained mostly by means of white- and colourwashed plaster work which can be done very cheaply.

"The combination of European and Chinese styles of architecture was the outcome of suggestions made by Lu Hai-huan, who was Director-General at that time.

"The variety in the individual architecture of the buildings may have imposed a certain amount of extra work on the engineers and the chief draughtsman, a call to which they readily answered, but otherwise it did in no way increase the cost of the buildings.

"With such a large undertaking as the Tientsin-Pukow Railway, undoubtedly is, it is a matter of course that the places of importance are rendered conspicuous by means of a superior style of architecture being adopted for their buildings; thus, Tientsin and Tsinanfu were provided with more elaborate edifices containing not only the usual offices and waiting rooms, but also quarters for inspectors.

"In this respect, the Northern Section have only followed the example set by the Peking-Mukden-Line where the stations at Tongshan and Peking have been rendered conspicuous by their ornamental buildings, of the Shanghai-Nanking Line which have made their Shanghai terminus a splendid specimen of magnificent architecture, or of the Southern Section which are erecting an extensive station building on the bank of the Yangtze.

"Finally, the objection has been raised that the handsome buildings on the Northern Section are out of place in surroundings of Chinese mud houses, but people who have found fault with this must be unaware of the fact that trees have been planted everywhere which—when grown up—will form a most suitable background for the buildings, creating the same parklike effects as can be observed when travelling by rail from Tsinanfu to Tsingtau.

"A small quantity of seeds procured from Europe and reared in our own nurseries supplied the necessary trees and shrubs.

"We may just as well take this opportunity to throw some light on the question of the cost of construction on both sections, which appears highly desirable after the FAR EASTERN REVIEW in its January, 1913, issue came out with the alarming statement that the actual cost of the Northern Section is estimated at £3,000 per mile above the cost of the Southern Section.

"That journal refers to the figures supplied by the Engineer-in-chief of the Southern Section and the information given by the Chinese of the Northern Section. According to the figures supplied by the Engineer-in-chief of the Southern Section, the cost of the construction on that section is £9,606 per mile. According to the statement of accounts on November 30th, 1912, as audited and approved

of by the auditor of the German Syndicate, and according further to the attached "Comparison of the nett cost of construction for Northern and Southern Sections," the cost of construction on the Northern Section is £10,473 per mile, including the cost of the Hwangho Bridge. But in order to compare the respective costs of the two sections the cost of the Hwangho Bridge must be entirely eliminated from the calculations, for the reason that there is no equivalent for the same on the Southern Section, and that—through the ignorance of the gentry of the province of Shantung—the width of the bridge spans was foolishly doubled. Thus, the cost per mile of the Northern Section comes to £9,160 per mile, that is to say £446. less than the cost per mile of the Southern Section."

The figures supplied by the German authorities are as follow:

(*See table on this page continued on page 453*)

The Southern Section

Just as the builders of the Northern Section seem to think that the figures already published do not convey a correct view of the costs of the line, and that the description given does not adequately explain the circumstances of construction, so do we find that there are some points connected with the description of the southern section which do not satisfy those interested.

In order to have the matter thoroughly ventilated we publish the following comments from one who has taken an interest in the subject:

"(1) It is stated that private advances of £560,000 have been made to the Northern Section, and of £400,000 to the Southern Section. This misrepresents the state of the finances of the Southern Section, as at the end of last year, that Section had lent £250,000 to the Northern Section, and only borrowed £173,000 to make up for this loan. No money at all need have been borrowed, had it not been for the loan made to the Northern Section. In the same portion of the article, it is mentioned that the Loan was originally to have been £7,500,000. It is true that there was a preliminary estimate of £7,400,000, but this was for a lighter railway, with 60lb. rail and with the cheapest possible equipment. The Chinese Government decided to have a first class line, and the sum of £9,800,000 was the amount considered necessary by the present Engineers-in-chief. This is the total of the only detailed estimates ever made for the Railway, and it has never been altered or amended.

"(2) The first sod of the Southern Section was turned in January, 1909, not October 1908. The Director General absolutely refused to allow any work to be started until he came to Pukow, and cut this sod himself.

"(3) The rails on the Southern Section have not all come from Hanyang. 14,000 tons came from England and 5,000 tons from Russia.

"(4) It is stated that the rolling stock of the Northern Section is more elaborate. This only applies to eight first class cars. The second class cars of the Southern Section are, at least, as good as those of the Northern Section. The third class cars are infinitely better, and the wagons being built of steel, with pressed steel underframe are considered by most Engineers to be superior to the more old-fashioned wagons of the Northern Section, with wooden sides, and built up underframes.

"(5) The ties are not creosoted Oregon pine, over most of the line. Most are Japanese hardwood, but there are also many miles on the Southern Section laid with Tasmanian sleepers, and with Australian Jarrah. Some creosoted Oregon pine sleepers were purchased for the Southern Section, against the advice of the Engineer-in-chief. They have proved quite unsuitable for the heavy traffic, and have already been replaced in very large numbers.

Another Statement

As it is a well-known axiom that figures can be made to prove anything, may not the capital cost of this line be set forth as follows as the simplest method of demonstrating the total cost:

Comparison of the Nett Cost of Construction for Northern and Southern Sections of the Tientsin-Pukow Railway

1. SOUTHERN SECTION.

The FAR EASTERN REVIEW'S article of January, 1913, gives the total amount of Capital received by the Southern Section sufficient to complete the line as	£ 2,635,100.—.—.
To be deducted: nett amount of interest	£ 363,100.—.—.
	£ 2,272,000.—.—.
Length of main line 236½ miles	
nett-cost of construction per mile $\frac{2,272,000}{236.5}$ per mile	£ 9,606.—.—.

2 NORTHERN SECTION.

Statement of accounts on November 30th, 1912, as audited and approved by the auditor of the syndicate:

CAPITAL AUTHORISED AND RAISED BY DEBENTURE STOCK

				Rate.
Under Loan-Agreement 1908.				
£ 3,150,000.-.- first issue	£ 1,890,000.-.- 93	132,300.-.-	£ 1,757,700.-.- Koop. T. 13,667,058.943	2.6 % &c.
second issue	£ 1,260,000.-.- 94½	69,300.-.-	£ 1,190,700.-.- Koop. T. 9,350,282.166	2.6 %
Under Supplementary Loan Agreement 1910 first issue	£1,890,000.-.- 95	94,500.-.-	£ 1,795,500.-.- Koop. T. 13,157,862.641	2.5¾
" second issue	(£1,410,000.-.-) not issued	—	— —	—
	£ 5,040,000.-.-	£296,100.-.-	£ 4,743,000.-.- Koop. T. 36,175,203.750	

TEMPORARY LOANS ON ACCOUNT OF UNISSUED PART OF SUPPLEMENTARY LOAN

				Rate.
Tientsin-Pukow Railway, Southern Section through Hongkong & Shanghai Bank	£ 250,000.-.-	Kooping Taels	1,832,061,075	2.8¾
Deutsch-Asiatische Bank, Berlin	£ 642,081. 1.8.	Kooping Taels	4,705,327,031	2.8¾
	£ 892,081. 1.8.	Kooping Taels	6,537,388,106	

CAPITAL BALANCE SHEET AT END OF NOVEMBER, 1912

	Taels cts.	Taels cts.
Capital (£4,743,000)		36,175,203.750
Temporary loans (£892,081. 1. 8.)		6,537,388,106
Remuneration to the Syndicate and loan-service-expenses	1,005,174.682	
Deutsch-Asiatische Bank, Tientsin	165,048,801	
" " " , Berlin	190,758.969	
Capital Cash Account	128,655,713	
Interest on loan	6,313,431.676	
Interest (received on Bank Balance)		1,111,517.781
Exchange		72,212.722
Nett-Traffic-income		1,862,344.117
Directorate General, Peking, (advances)	416,228.835	
Transfers Divisional:		
District Tsinanfu	35,610.550	
Telegraph Department	15,195,084	
Brickworks Futsun	2,719.809	
Various creditors (mainly Maschinenfabrik Aug-Nuernberg A. G. due for bridge-work done)		1,068,691.621
Various debtors	9,470.904	
Final Head as per Schedule A.	37,189,873.247	
Suspense Accounts as per Schedule B.	1,355,188.837	
	Koop. T. 46,827,358.097	Koop. T. 46,827,358.097

CAPITAL EXPENDITURE DETAILED SCHEDULE A. OF FINAL HEADS

I.	Land purchase	Kooping Tls.	1,812,065.296
II.	Earthworks, etc.	" "	1,695,247.820
III.	Enclosures, excl. of the stations	" "	3,483.860
IV.	Level crossing	" "	55,151.799
V.	Bridges and passages	" "	7,539,884.966
Va.	Hoangho Bridge	" "	4,564,357.588
VI.	Tunnels	" "	
VII.	Superstructure on the mainline and on the stations	" "	9,267,846.075
VIII.	Signals and telegraphic signs	" "	571,406.553
IX.	Stations and Buildings.	" "	2,149,471,552
X.	Workshops and Stores	" "	669,206.304
XI.	Extraordinary works	" "	165,664,885
XII.	Rolling Stock	" "	3,936,180.185
XIII.	General Charges	" "	3,368,490.930
XIV.	Extraordinary	" "	319,700.180
XV.	Commission on Purchase	" "	761,518.316
XVI.	Railway Police	" "	310,106.838
	Total	Kooping Tls.	37,189,873.247

NORTHERN SECTION

Capital raised	£4,743,900
Plus £250,000 borrowed from Southern Section	250,000
	£4,993,900
Plus advances by Deutsche-Asiatic Bank	642,081
	£5,635,981

Mileage of the section 457, equalling £12,332 per mile.

(These figures include interest charges during construction).

SOUTHERN SECTION

Capital raised	£2,786,103
Less £250,000 advanced to Northern Section	250,000
	£2,536,103
Plus advances by Central China Railways, Limited	363,000
	£2,899,103

Mileage of the section 236½, equalling £12,258 per mile.

(These figures include interest charges during construction).

Northern section, per mile	£12,332
Southern section, per mile	12,258
Southern section, less	74

We are enabled to give still another statement as follows:

Comparison of the cost of construction of the Northern and Southern Sections of the Tientsin-Pukow Railway, based on amounts actually drawn from the Loan Syndicates, etc. to Sept. 30, 1912:—

NORTHERN SECTION

Amount derived from issue of Bonds	£4,743,900
Amount borrowed from funds of Southern Section	250,000
Amount borrowed from Deutsch Bank, to Novr. 1912	642,081
Sundry creditors, Kuping Taels 1,068,691. Say	140,600
Total expenditure to November 30, 1912	£5,776,581.

Length of Northern Section in operation, is according to working time table, 430 miles. According to a statement published it is 457 miles, which length probably includes some service line.

If 430 miles, the cost per mile works out at £13,430 per mile.

If 457 miles, the cost per mile works out at £12,640 per mile.

The above amounts include interest paid on capital, and no account has been taken of traffic earnings which have been used for construction.

SOUTHERN SECTION

Amount derived from issue of bonds	£2,712,100
Less loan made to Northern Section	250,000
Balance	£2,462,100
Advances from Loan Syndicate to September 30, 1912	173,000
Total Amount actually received	£2,635,100
Less Cash balances in Banks	106,278
Actual amount of capital expended to September 30, 1912	£2,528,822

Length of Southern Section in operation, according to working time table is 236½ miles, and cost per mile therefore works out at £10,692 per mile, including interest. As in the case of the Northern Section, no account has been taken of traffic earnings.

SCHEDULE B. SUSPENSE ACCOUNTS

Purchase	Kooping Taels		3,849.505
Head Store	,,	,,	221,582.488
Store Tsinanfu	,,	,,	1,095,818.107
Stores Divisional	,,	,,	910.424
Miscellaneous Advances	,,	,,	11,413.836
Printing and Stationery	,,	,,	7,928.317
Fuel and Oil Account	,,	,,	13,686.160
	Kooping Taels		1,355,188.837

Capital Expenditure on November 30th, 1912, as above	Kooping Taels		37,189,873.247
To be added:			
Advances debitable to Capital Expenditure	,,	,,	11,413.836
Printing and Stationery	,,	,,	7,928.317
Stores issued,but not accounted for appr.	,,	,,	550,000.000
Funds needed to complete the line appr.	,,	,,	500,000.000
Total approximate cost inclusive of Hoangho Bridge	,,	,,	38,259,214.000
LESS:			
Traffic income Northern Section	,,	,,	1,862,344.000
(Traffic-income in Southern Section has been used for construction purposes but has not been accounted for therefore the total cost of construction of Southern Section is increased by the sum of traffic-receipts)			
	Kooping Taels		36,396,870.000
LESS:			
Hoangho-Bridge	,,	,,	4,564,358.000
Total approximate cost of line excl. of Hoangho Bridge	Kooping Taels		31,832,512.000

Length of line 457 miles or per mile	Kooping Tls. 79,643.000	incl. of cost of Hoangho Bridge
(average rate of exchange) @ 2.7 1/8 =	£ 10,473.-.-	
(as before) per mile	Kooping Tls. 69,655.000	excl. of cost of Hoangho Bridge
(average rate of exchange) @ 2.7 1/8 =	£ 9,100.-.-	
SOUTHERN SECTION	£ 9,606.-.-	
NORTHERN SECTION	£ 9,160.-.-	
SOUTHERN SECTION MORE	£ 446.-.-	

NEW PHILIPPINES ARMY COLLIER

The Shanghai Dock and Engineering Company were the successful tenderers for the building of a New army collier, which is to be the finest and most complete vessel of the type ever launched. The chief of the quartermaster's corps in the division of the Philippines, Colonel Isaac W. Littell, awarded the contract to the Shanghai Dock and Engineering Company, which has been entrusted in the past with much important work for the Insular Government, all of which was performed expeditiously and thoroughly satisfactorily.

The collier is to cost P.742,000 and is to be delivered in sixteen months time from the seventh of February. The vessel will be fitted with hydraulic pressure loading and discharging equipment, capable of handling 600 tons of coal an hour, with automatic weighing machines.

The specifications call for a single screw self-propelling steel collier, 362 feet over all. 35 feet between perpendiculars, 50 feet breadth moulded, a depth moulded of 20 feet and 6,000 tons dead weight carrying capacity.

The new collier will be fitted with one set of direct acting vertical two crank compound surface condensing engines, four coal elevators, each capable of discharging 150 tons an hour, four continuous automatic weighing machines for the elevators and one coal conveyor, capable of discharging at a height of 50 feet above the water level when the collier is at loaded draft, a surface condensing plant for auxiliary propelling machinery and other auxiliary machines, one centrifugal circulating pump and one Edwardes type air pump of ample size for all requirements, independent steam pumps, steam turbine electric lighting plant, a cylindrica multitublar boiler of ample size for all requirements, etc.

In either discharging or loading the coal will be lifted by the hydraulic pressure devices and conveyed through shoots from one vessel to another.

The last ship building contract awarded to the Shanghai Dock and Engineering Company by the U.S. army was for the transport Merritt completed last spring and now running in the inter-island service. The Merritt was the largest vessel turned out at Shanghai up to that time.

Bank of Japan

At the sixty-first general meeting of the Bank of Japan, the following plan of accounts and distribution was unanimously adopted:

	Yen
Net gain for the term	2,937,239
Balance brought over from the previous term	1,699,373
Total	4,636,612
This was distributed as follows:	
Dividend on old shares (6% per annum)	900,000
Dividend on new shares (6% per annum)	225,000
Reserve	300,000
Sinking funds	10,000
Bonus to officials	181,000
Second dividend on old shares (6% per annum)	900,000
Second dividend on new shares (6% per annum)	225,000
Balance carrried forward to next accounts	1,895,612

THE HU-KUANG LINES

REVISION OF THE AGREEMENT

Unless unforeseen difficulties arise work on the construction of what are known as the Hu-kuang railway lines will be simultaneously proceeding very shortly. According to the agreement come to on May 20, 1911, a five per cent. gold loan of £6,000,000 was floated to:

(1) "Redeem certain unredeemed gold bonds to the total par value of gold $2,222,000, issued by the American China Development Company on behalf of the Imperial Chinese Government, and

(2) "For the construction of a Government railway main line from Wuchang, the capital of the Hupeh province, through Yo-chou and Changsha, the capital of Honan province, to a point in the district of Yi chang-hsien, in the prefecture of Ch'en-chou, of the southern boundary of Hunan, connecting with the Kwangtung section of the Canton-Hankow railway line, the total length of this line, to be known as the 'The Hupeh-Hunan section of the Canton-Hankow railway line,' being an estimated distance of 1,800 Chinese *li*, or 900 kilometres, and of

"A Government railway main line from a point at or near Kunhshui, in the province of Hupeh, connecting with the Hankow railway line, and passing through Hsiangyang, and Chingmenchou to Ichang, an estimated distance of 1,200 Chinese *li*, or 600 kilometres; and from Ichang to Kueichoufu in the Province of Szechuan, an estimated distance of 600 Chinese *li*, or 300 kilometres—this latter section of the line having been added in substitution for the branch line from Chingmenchou to Hanyang originally agreed upon—the total length of this main line, to be known as 'The Hupeh section of the Szechuan-Hankow railway line,' being about 1,800 Chinese *li*, or 900 kilometres."

The agreement provided that after the deduction of the amount required for the redemption of the gold bonds the balance of the loan proceeds should be devoted to the construction of the railway lines above mentioned—including the purchase of land, rolling stock and other equipment—to the working of the lines, and to payment of interest on the loan during the period of construction, which is estimated at three years from the actual beginning of the works, a longer period, however, being allowed for the completion of the section from Ichang to Kueichoufu in consideration of the engineering difficulties to be encountered.

The agreement provided for simultaneous commencement of work at Wuchang, Changsha, Kuang-shui and Ichang within six months after the signing of the agreement, but the outbreak of the revolution in October completely blocked the preparations that were begun after the flotation of the loan

The engineer for the British section (Mr. A. H. Collinson) had been appointed and was actually in the country with a staff engaged on survey work when news of the revolution reached him. He had with him a bodyguard of troops, but they were so frightened by the reports traveling down the country that they would have deserted him had he not held complete command over them. The incident is mentioned merely to indicate that the soldiers agreed to return with the engineer and his party to Wuchang if *he* would give them protection! A case of one white man, who originally set out to be guarded by a squad of soldiers, being trusted and depended upon by the soldiers to guard them from their own countrymen!

The revolution completely obstructed progress, and was responsible for the introduction of other factors which necessitated reconsideration of some points in the agreement, the bankers deeming it advisable to have the security revised, the arrangements for the banking of funds reconsidered, and a change instituted with regard to the auditors. These matters took considerable time to adjust, and it was not until recently that a settlement satisfactory to both the Board of Communications and the Bankers was come to.

In the agreement it was stipulated that the security for the loan should be the general likin of Hupeh province, amounting to Taels 2,000,000 per year; the Hupeh additional salt tax for river defence amounting to Taels 400,000 per year; the Hupeh new additional two cash salt tax of September 1908, amounting to Taels 250,000 per year, the Hupeh collection of Hukuang inter-provincial tax on imported rice, to the amount of Taels 250,000 per year; the general likin of Hunan amounting to Taels 2,000,000 per year; the Hunan Salt Commissioner's Treasury regular salt likin, to the amount of Taels 250,000 per year, in all amounting to Taels 5,200,000 per year.

At the time the agreement was being negotiated an effort was made to have the

TSEN CHUN-HSUAN,
New Director of the Hu-kuang Lines

railway lines to be built pledged as collateral security, but the authorities resisted overtures in this regard chiefly owing to the popular opposition to placing what are described as "sovereign rights" in the hands of foreigners. The revolution produced such changes in the value of the security already pledged, however, that reconsideration was necessary. One of the first steps to be taken by the revolutionists was to declare the abolition of likin, and though that was eventually revised likin collections fell off almost entirely as a result of the dislocation of the machinery of tax collection. Other revenues pledged also suffered, and the aftermath of the revolution was such as to persuade the foreign bankers that they would be unwise to allow the money raised by the issue of bonds to leave the foreign banks in which it was deposited without additional security and safeguards. Therefore, negotiations were re-opened with the Minister of Communications to obtain additional security The Government protested that the taxes were unaffected, but after much argument it was agreed that the property and materials of the lines should be specially given as a provisional guarantee that the likin was unimpaired.

In Article 14 of the agreement it was stipulated that the transferred funds to the extent of one-half of the net balance of the loan proceeds may, at the discretion of the Ministry of Posts and Communications, be deposited with the Bank of Communications (Chiao-tung Bank) and/or with the Taching Government Bank, the Imperial Chinese Government declaring itself responsible for all the funds of the loan deposited with those banks.

The revolution, of course, not only removed the Imperial Chinese Government, but it also seriously affected the credit of all native banks, including the two which to a greater or less extent enjoyed the advantage of Government backing. Both banks were affected by the financial crisis that followed the outbreak of hostilities between the revolutionists and Imperialists, and as the Government since the declaration of peace has not managed to put the Treasury in order the foreign bankers responsible for the loan funds were loth to agree to any transfers of loan funds to banks which they considered to be unsound. The discussion on this delicate point lasted for some time before a decision could be reached, the Minister of Communications declining to admit that the banks were unsound. However, it was pointed out that the banks were not doing their usual business with foreign banks because of their inability to do so, and the Minister reluctantly agreed.

It was then decided that the loan funds shall be deposited temporarily with the Deutsch-Asiatic Bank, the Hongkong and Shanghai Banking Corporation, the Banque de l'Indo-Chine, and the International Bank in readiness to be drawn from time to time as required for the work until such time as either the Chiao-tung Bank or the Taching Bank has been reorganised as a State Bank of China and has established its credit, and business relations with foreign banks have been mutually resumed. When such time comes the Government may consult with the Groups as to a reversion to the methods of transfer laid down in Article 14 of the Agreement by which the deposits of the proceeds of the loan funds shall be shared with the Chiao-tung Bank or the State Bank of China as agents.

Another point upon which serious thought had to be given by the Ministry was one raised in connection with the keeping of accounts. Article 14 of the loan agreement sets out that auditors are to be engaged by the banks for the inspection of accounts. Any requisitions for money upon the Construction Accounts in the banks must be passed by the Auditor before the amount can be drawn, and the Auditor, should he find that there are any irregularities in the payments to be made, may "in the first place ask the Managing Director for specific explanations, and if the Managing Director is unable to furnish definite explanations, the Auditor may refer the matter to the Ministry of Posts and Communications for its instructions."

The agreement also stipulated for the accounts to be kept in Chinese and English in accordance with accepted modern methods, to be supported by all necessary vouchers. Such accounts and vouchers were to be open for inspection, at any time during the period of construction, by the Auditors.

This was not deemed by the banks to be sufficient safeguard in view of the altered conditions in the country, and they pressed in addition for the appointment of qualified accountants.

The Ministry of Communications ultimately agreed that as China was actuated by a desire to have accounts kept so that they should be clear for auditing she would herself forthwith engage experienced foreign accountants whose executive power and appointment to the various railway sections shall be entirely and exclusively controlled by the power of engaging or dismissing the accountants, such appointments to be made by the Chinese Government and to have no concern whatever with the loan agreement.

The Board further consented to the members of the Banks' staffs in Hongkong acting provisionally as Auditors, pending the appointment of others.

The bankers also deemed it advisable to have adequate provision made for the supervision of materials, and it was ultimately decided that proper arrangements would have to be made for the control of material during the period of construction. It was therefore agreed that the Managing Director of the Railway and the Engineer-in-Chief should select a foreign engineer to be stationed at the store yards to control, supervise, and keep records, and in the event of damage, loss, or misuse the Managing Director and the Engineer-in-chief should be responsible.

In accordance with the provisions in the agreement the two lines of railway constructed between Changsha and Chuchow, in Hunan, and the sixteen miles built from Ichang, in Hupeh, together with the property of the two private companies concerned, have been taken over by the Government and will be included in the systems to be constructed. Both were described in the January number of the FAR EASTERN REVIEW and further reference to them is not called for here.

The foreign Engineers-in-chief called for by the Agreement have also been appointed. Article 17 provides that "The construction and control of the railway lines shall be entirely and exclusively vested in the Imperial Chinese Government, who, for the work of construction, will select for appointment a fully qualified British Engineer-in-chief for the Hupeh-Hunan section, from Wuchang to Yichanghsien; a fully qualified German Engineer-in-chief for the Kuangshui-Ichang section of the Szechuan-Hankow line, and a fully qualified American Engineer-in-chief for the section of that line from Ichang to Kueichow-fu.

The Engineers-in-chief are to be under the orders of the Chinese Director-General and the Chinese Managing Directors of the respective lines, or in their absence, of their duly qualified representatives, and will carry out all the wishes of the Ministry of Communications with regard to the plan of construction of the lines. Whenever appointments are to be made or functions defined of the technical members of the railway staff, as well as in the case of their dismissal, the Director-General, the Managing Director, or their duly authorised representative, will act in consultation with the Engineer-in-chief concerned, and in case of disagreement the matter will be referred to the Ministry of Posts and Communications, whose decision shall be final.

The three foreign engineers have now been appointed. They are:

Mr. A. H. Collinson, in charge of the work on the British section.

Mr. Linow, who was assistant to the Engineer-in-chief of the Northern Section of the Tientsin-Pukow line, in charge of the German section of the Szechuan-Hankow railway.

Mr. Frank Beckwith, recently arrived in Peking from America, in charge of the American section from Ichang to Kweichow-fu.

The Chinese Director-General of the lines was recently appointed, the post being finally given to Tsen Chun-hsuan, who was a well-known official in the old regime, and was at one time Viceroy of the two Kwang provinces. The appointment of this official came as a result of the resignation of General Huang Hsin, who was previously appointed to the post.

The seal of office was specially conveyed to Shanghai to be delivered to Tsen Chun-hsuan, and having accepted it he immediately made preparations to journey to Peking. It is interesting to note in connection with the appointment of this official, that he was appointed just before the revolution to go to Szechuan to pacify the people who were agitating against nationalisation of railways. The late Tuan Fang had gone ahead of him on a similar mission, and was decapitated by his soldiers. Tsen Chun-hsuan only got as far as Wuchang, and was resting there when the revolution broke out. In disguise he fled the city and reaching Hankow, eventually made his way safely back to Shanghai.

MR. FRANK BECKWITH, ENGINEER-IN-CHIEF, AMERICAN SECTION, HANKOW-SZECHUAN RAILWAY

The Managing-Director of the British section is Mr. C. C. Yen, brother of Mr. W. W. Yen, who is en route to Germany to take up the post of Chinese Minister to Berlin, but the Managing Directors for the other two sections have not so far been appointed.

THE AMERICAN ENGINEER

MR. FRANK BECKWITH

Mr. Frank Beckwith, the engineer appointed to take charge of the American section of the Hankow-Szechuan railway, arrived in Peking recently, and waited there pending the settlement of affairs to enable him to proceed to Ichang, where he will commence his work. Mr. Beckwith brings with him to China valuable experience in railway building, and his record shows that he is familiar with the problems which will confront him in Szechuan so far as heavy engineering difficulties are concerned. The section of the line which he will have to build is the most difficult connected with the system to be constructed with the Hukuang loan funds.

Mr. Beckwith was born in Quincy, Illinois, on November 8, 1869. He graduated at the University of Illinois, in Civil Engineering, and later joined the Engineering department of the C. B. & Q. R. R. where, from 1892 to 1903, he worked at bridge designing, interlocking, signal work, railway location and construction. Prior to this, however, he had had experience on the Mississippi River improvement works, in dredging and dams construction, under E. H. Ruffner, Capt. of Engineers of U. S. A. He was ultimately Resident Engineer on construction of the Mississippi River Bridge, at Quincy, Ill., and also the new freight and passenger terminals at that point.

In 1809 he took charge, as Engineer of the Iowa lines C. B. & Q. R. R., of relocation and reconstruction of the main line across Iowa, which included one of the heaviest pieces of steam shovel work which has been done in the United States. Mr. Beckwith was for four and a half years in charge of this work, which cost $13,000,000 (gold). Between 1903-6 he was the principal Assistant Engineer and Bridge Engineer of the Lake Shore and Michigan Ry., Cleveland, Ohio, during which time the Company spent $20,000,000 (gold) for new main and yard tracks, round houses, shops, coal docks, water plants, etc.

In 1906-7 he was General Superintendent and Chief Engineer of the New York Central Line Belt Lines, 600 miles, terminals around Chicago, Ill., and designed and constructed $1,500,000 of improvements, among them the big terminal yard at Gibson, Ind. Between 1907-9 he was with the Northern Pacific Ry. in charge of line and grade revision, as well as the double tracking of the road from Garrison to Missoula, tunnelling in the Rocky Mountains, taking out heavy rock cuts, building foundations for bridges in swift streams, etc. Between 1909-1911 he was building railways in various parts of the States for the Walsh Construction Co., Davenport, Iowa.

NATIONALISATION OF THE SZECHUAN LINE

AGREEMENT FOR THE TRANSFER

The following is a translation of the agreement made between the Department of Communications and the Szechuan-Hankow Railway Company re the taking over of the Szechuan-Hankow Railway by the Department of Communications.

Liu Sun-yuan (hereinafter to be called the representative) acting as representative of the Szechuan-Hankow Railway Company (hereinafter to be called the Company) has received full powers from the whole body of shareholders of the said Company, to confer with the Department of Communications (hereinafter to be called the Department) regarding the nationalization of the said railway, and have agreed as follows:—

1.—The construction work, machinery, workshop, and land, etc., of the whole Ichang-Wanhsien section of the Szechuan-Hankow Railway shall be handed over to the Government, as agreed upon by the whole body of shareholders of the Company, and all other sections of the Szechuan-Hankow Railway (from Chengtu to Wanhsien) shall also be handed over to the Government; but in the future, if the Government alters the location of the railway, in such a way that this railway is not made a trunk line, excepting the Ichang-Wanhsien section, all other sections shall be constructed by the Company.

2.—All cash funds of the Company shall be retained by the Company to be used for other

industrial purposes, such cash funds are of the following description: those that are deposited with the Bank of Communications, the Hanyang Iron Works, the Cement Company, and all the cash funds of the Company deposited in Shanghai, Hankow, Chungking, Chengtu. In addition, the machinery and workshop, land and all other appended property, of the Copper Mint of Chengtu, shall also be taken over by the Company, and the Government shall undertake to pay to the Company all such funds as were loaned to the Bank of Communications, and advances which were made to the Hanyang Iron Works.

3.—Regarding the public Loan Bonds issued for the payment of construction work on the Ichang-Wanhsien section, the outstanding debts on account of materials bought from the various foreign Companies, and the loan of the Hupeh Army's Payment Bureau Loan (the above three items amounting to about over Tls.900,000) it is agreed that the said bonds shall be redeemed by the Government, the outstanding accounts with the various foreign Companies shall be settled by the Government, and the Hupeh Army Payment Bureau Loan shall be dealt with by the Company.

4.—The Department shall issue promissory Notes to the Company to reimburse all direct and indirect expenditure incurred on construction work by the Company; expenditure directly or indirectly incurred by the Company, and, beginning on the date when the railway is taken over by the Government, an annual interest of 6% shall be paid on this reimbursement due to the Company; the interest shall be paid to the Company once a year. All expenditure on construction work directly incurred by the Company up to the end of the eighth month of the first year of the Republic (August 31, 1912) shall be paid to the Company in instalments, within ten years; all expenditure on construction work indirectly incurred by the Company, such as interest on shares, salaries, students' tuition, etc., shall be reimbursed to the Company in instalments within five years, beginning on the eleventh year after the taking over of the railway by the Government, the different items being detailed in a separate statement. All the interest on shares due to shareholders before the taking over of the railway, shall be reckoned as indirect expenditure. All the direct and indirect expenditure shall be calculated according to the records of the Szechuan Railway Company Shareholders' Meeting and the records kept by the Department of Posts and Communications of the former Tsing Dynasty. All direct expenditure shall be calculated jointly by a specially appointed officer of the Department and the Manager of the Company at Ichang; the indirect expenditure shall be calculated jointly by a specially appointed officer of the Department and the Head Office of the Company at Chengtu, so that the railway may be properly handed over. All expenditure that has no bearing on the railway work either directly or indirectly, shall not be taken into account.

5.—All bankrupt accounts at Shanghai shall be attended to by the Company, and the Government shall assist in the collection of such accounts.

6.—If in the future the Szechuan-Canton-Hankow General Railway Company be organized, holders of the Promissory Notes mentioned in Article 4 shall be free to exchange such Promissory Notes for share certificates of this General Railway Company.

7.—All detail procedures for the carrying out of the above articles shall be further discussed by the representative with the Department.

To insure quick transmission of news General Hsiung Hsi-ling has ordered the installation of telegraph connections at Linhsi and Waichang, and all other places where wire connection is not in good order. At important intervals branch telegraph offices are to be established, to keep watch on the line.

General Hsiung Hsi-ling has requested the Government to send engineers to make a survey, and make preparations to build the Peking-Jehol light Railway.

Railways in Kwangtung

In Canton there are the Canton-Hankow, the Hsin-Ning, the Kowlung-Canton, the Samshui, and the Chaochow-Swatow Lines, beside the proposed Huichow-Chaochow and the Canton-Macao Railways. The following shows the conditions of the various lines:—

The Canton-Hankow Railway is opened to Lienkiangkou, a point seventy-five miles from Canton. At present owing to the lack of funds, a fifteen mile section between Lienkiangkou and Yingteh, the construction of which was started in May, last year, had been completed at the end of last month. This will be opened to traffic as soon as the iron bridge over the Wengyuanho River extending for the length of 750 ft. is completed.

On account of the unquiet conditions then prevailing in Canton, when shareholders were called to pay in the third installment, few responded. But since then, order having been restored money began to pour in, and half a million dollars are said to have already been got together. As to the source, whence came four hundred fifty thousand dollars paid to Great Britain as the principal and interest of a loan during last July, reports vary, some saying that the company itself disbursed the amount, while others say that the local government paid in its place.

A new elegant office has been constructed near Huangsha Station with a sum of one hundred thousand dollars realized through the sale of the old office in the City.

The construction of a section for nearly 25 miles between Niuwan opposite of Kungi and Kongmoon via Hsinhui on the Hsin-Ning Railway was started in October, 1909, and was opened to traffic in October, 1911. A distance of 3 miles from Kongmoon to Peichiehkow will be ready for traffic soon. Tracks are already laid from Kungi up to Toushan, but from Toushan to Sanchiahai the work is not completed.

No bridge is built across the Niuwanho, a river flowing between Niuwan and Kungi, crossing is intended to be made by means of a ferry boat This boat was made at Hongkoag at the cost of, $220,000, and although it is in serviceable condition it is not used for some reason. Travellers are now obliged to take a small steamer at Niuwan, and after landing at Kungi walk about one mile to get in a train waiting for them at the opposite side. 13 engines, 73 passenger coaches and 155 goods cars are employed on this line. The income of the line amounts to something like 15,000 dollars per month, which comes to about 4% profit on $4,450,000, the total amount invested for the enterprise. Districts around Hsinning being populated with well-to-do people, who amassed comfortable fortunes abroad, the line is liberally patronized by passengers, but production being limited to rice and oranges, freight traffic is inconsiderable.

No special development has been made on the Kowloon-Canton Railway, with the exception that Great Britain bought a tract of land comprising about 340,000 sq. ft. last June at the cost of $1,762,615 to prepare for the expansion of Kowloon Station when the Canton-Hankow Line is completed. Nothing particular to mention has transpired on the Samshui and the Chaochow-Swatow Railways.

Prior to the Revolution, construction was started on the section for sixty miles between Fangtsun opposite to Canton, and Hsiangshan on the Canton-Macao Line, with a capital of six million dollars, but it was abandoned on account of the disturbance. During last November, however, Mr. Liang Yunykuei, a cousin of Mr. Liang Tung-yen and one of the promoters, returned from Peking with necessary permission to proceed with the work, and is now taking up subscriptions. Mr. Liu Yaoting, former engineer of the Kirin-Changchun Line, is expected to be engaged in the capacity of Chief Engineer.

All the shares of the Huichow-Chaochow Railway have been subscribed. The promoters are scheming to organize a railway bank with the money thus raised, together with a sum of ten million dollars to be borrowed from an American capitalist. One half of the loan is understood to be furnished in the shape of railway materials, the whole loan being secured by the property of the line.—*China Tribune.*

Peking-Kalgan Line

The Peking-Kalgan Railway continues to prove its value to the Chinese Government as a profit-earning medium. It is the pioneer of railways built with Chinese capital and operated by Chinese engineers and that its business continues to increase, considering the heavy grades and great cost of negotiating the Nankou Pass, speaks volumes for the capacity of those who are in control. The unusually high gradients not only compel a heavy fuel consumption but also demand good train crews.

The total distance now covered by the line is 141 miles. It was originally built more with a view of its strategic value than with the idea of developing commerce, but its effectiveness in opening up the rich grain producing areas of the table-land has surprised even the most sanguine of its original advocates.

The capital outlay of the line was Taels 6,935,086, and, as will be seen from the following table, the yearly gross income has shown a steady increase, and the cost of working a substantial decrease:

1st year (from opening date to end of year, 4 months)	$ 476,441.59
2nd year (12 months)	1,329,632.40
3rd year (12 months, and 25 days, intercalary month included) ..	1,629,050.36

During last year, linseed began to come in from outlying districts, and, as the seed has found such a good market, the export has gone up by leaps and bounds. From this source alone the freight has profited immensely. The following table will give a general idea of the present earning power of the line. When the extension to Tatung has been completed thus opening up rich coal fields as well as a large agricultural and pastoral area, the line should prove one of the most profitable in the country.

	Passengers	Goods	Total
February	$ 15,544.75	60,885.04	
March	35,854.70	133,797.80	
April	44,687.20	201,228.60	
May	48,050.25	252,353.02	
June	40,188.55	178,780.71	
July	35,640.35	110,163.44	
August	47,129.05	109,350.54	
September	44,873.70	107,298.47	
October	49,189.60	140,450.48	
November	50,618.75	144,305.62	
December	47,855.69	173,633.97	
Total for 10 months and 17 days	$459,632.59	1,612,247.69	
Plus-military traffic	$ 66,444.04	——	
Total	$526,077.53	$1,612,247.69	$2,138,325.22

The working expenses of the line are being greatly reduced, and the following table will show the ratio:

	Ratio
1st year from opening date to end of year, 4 months..	168.45%
2nd year	94.32%
3rd year	60.12%
4th year, 1st year of China Republic (1912)	36.76%

Had the revolution of 1911-12 not compelled a discontinuance of work on the extension of the line to Tatung that city would now have been connected with the capital.

Within recent months work has been resumed, and about ten miles of earthwork have been finished and is now ready for the rails. Although the country is suffering from a dire shortage of money the Government has sanctioned the construction of the line as far as Tatung-fu, and by the end of this year it is hoped trains will be running there.

Survey will be continued to Kwei Hua-ching, the neighbouring city of Sui-yuen, where it was originally introduced to run the line. The change has been decided upon merely because Kwei Hua-ching is a market town. Sui-yuen is the old city, but is only a few miles away from the former place. When Tatung is reached the line will be located to the market town of Feng Chen some 32 miles further on.

Only 26 miles now separate rail head from Tatung, but the work will be heavy. At Tatung a river has to be crossed, and tenders have recently been opened for the bridge to cross that stream. The bridge will be one of twenty spans of one hundred feet each. The specifications call for a Pratt truss deck girder bridge, on concrete pillars.

The maintenance of the whole line from Peking has been well kept up during the year and an eye is being constantly kept on the rolling stock, steps being taken to replenish stock as demand increases. Ten locos were purchased last year.

Some striking facts illustrative of the development of the country through which this line passed, and of the creation of a great trade in linseed, are given by the *China Tribune*, as follow:

Whilst disquieting rumors were in circulation as to the possible outbreak of a revolution in China some years ago, work was going on to contruct a line starting from Kalgan and reaching either Maimaicheng or Suiyuancheng by passing through the north-western portion of Shansi, and a section between Kalgan and Yangkao for 100 *li* was completed and opened to traffic in the winter of 1911, immediately after the uprising had taken place at Wuchang. It is impossible to imagine what a splendid effect this short line has produced upon the various places along the road and what amount of activity it has stirred up in the grain market of the district as well as the country lying far out beyond the Great Wall.

In the days when this railway was not in existence, places such as Huaian, Chaikoupu, Yangkao or Fengchen located at the outside of the Wall were small villages of no importance. But within six months after the restoration of peace these hamlets suddenly developed into thriving towns. Now, travelers will notice, as they take a trip on the line, mountains of oat, barley, wheat, millet, and kaoliang ready to be shipped to Peking, and rapeseed and linseed to be exported from Tientsin, piled up at every station, and scores of Chinese forwarding agencies established thereat. The greatest activity is displayed in linseed transactions, an article of exportation discovered only in recent years.

The northern part of Shansi and the district beyond the Great Wall adjacent to that Province have been noted for the production of cereals. From time immemorial, the overproduction of yumai (oat), barley, wheat, hsiaomi (millet), kaoliang, beans, together with rapeseed, linseed and flaxseed, was shipped to Kalgan, Peking, Tientsin, etc. The soil thereabout being particularly suited to the cultivation of linseed, an enormous quantity of it was raised. It was estimated that its annual yield at places around Fengchen and Yangkao reached nearly one million piculs. And yet up to the fall of 1911, the article was never thought to be of any value except extracting oil out of it to be used for culinary and lighting purposes.

Those who first found out that there is a market in foreign countries for Shansi linseed were Japanese merchants. When the section of the railway between Kalgan and Chaikoupu was opened to traffic prior to the outbreak of the Revolution in 1911, the Mitsui Bussan and Gisel & Co. despatched men thither and started to buy the article. As no one beside them knew anything about it, they met no competition and were able to purchase any amount of the finest goods as a very moderate price. Many contracts were made, and bargain money was paid. But before they could ship the goods, the effect of the disturbance was felt even in that remote quarter. Railway transportation was suspended; remittance of money became impossible. Under the circumstances, the two firms were compelled to cancel the contracts at a heavy loss.

When peace was restored, foreign merchants at Tientsin, who had heard of the abundance of linseed in the northern part of Shansi, lost no time in sending their buyers to Kalgan and began to buy it. As the number of buyers increased, competition became keener, with the result that the price soared up and the supply became scarce. The price of the best quality which was Fengping Taels 1.20 per picul at the beginning is now more than doubled. The present estimated cost laid down at Tientsin is Tls. 3.38.

The Sinyang-Pukow Line

Efforts are being made to try and effect an agreement for the construction of what is called the Pukow-Sinyang railway. The right to build this line was granted some years ago to the British and Chinese Corporation. That organisation is now endeavoring to negotiate an agreement with the Minister of Posts and Communications, but it is not likely that Pukow will be one of the connections. It is probable that the line will connect the Peking-Hankow line and the Tientsin-Pukow line with Sinyang as the junction on the one side, and a spot to be selected almost opposite as the junction on the other.

Mr. Shen Yen-pai was appointed some time ago to discuss matters with the Corporation, and already an engineer has been sent to investigate probable routes.

We understand that Mr. Bourne, who was connected with the Tientsin-Pukow line (southern section) will be the Engineer-in-chief of this proposed line, when it is decided upon.

Kiaochow-Yichowfu Railway

In the 24th year of Kuang Hsu an agreement was made between China and Germany to build the Kiaochow-Yichowfu Railway jointly. As China had no money the proposal was indefinitely put off but recently the Chinese Foreign Office received from the German Minister a note to the following effect: (1) China shall give permission to Germany to build the Kiaochow-Yichowfu Railway, passing and connect with the Tsinanfu railway. (2) Within thirty *li* of the line the Germans shall have control of mining.

The Minister of Foreign Affairs has conferred with the Minister of Communications about this and they are devising means to build the line jointly with Germany and also will try to effect some changes in the Agreement.

The German Minister visited the Chinese Foreign Office recently with regard to this matter and intimated that if a decision was not come to within eighteen days Germany would proceed with the building of the line.

Shenchow-Changteh Railway

The Chinese Government has received a report from Hunan Tutu Tan with regard to the loan for the proposed Shenchow-Changteh Railway in Hunan. The report stated that the Hunan Railway Company had approached a certain British Company for a loan of Tls. 10,000,000 for the construction of the section from Shenchow-fu to Changteh, and the negotiations had been successful, the articles being generally fair and acceptable. The two parties had now decided every point, and the British Company would soon send an engineer to inspect the proposed line. If he reports that the railway may be profitable, the Company will advance Taels 4,000,000 as a first instalment. The Government has sanctioned this step, but has wired the Hunan Tutu to instruct the Hunan Railway Company to refer the Agreement to the Government for approval before it is signed.

Both Changteh-fu and Shenchow-fu are on the Yuan-kiang, which rises in Kweichow province, in the west, and flows into the Tungting lake. The proposed railway will traverse the valley of this river, which at present serves as the chief means of distribution of merchandise received at Changteh. The river is, however, difficult of navigation. Rapids commence 35 miles above Changteh-fu and render navigation rather hazardous. Nevertheless, thousands of small boats traffic unceasingly upon its waters and those of its principal affluents, even up to Kweichow, and to the southeast of Szechuan. The proposed railway would facilitate the handling of all the products of the region, which is well populated.

Changteh-fu has a population of some 300,000 and is situated near the mouth of the Yuan river. It is the great central mart of northwest Hunan. It exports to Kweichow and Szechuan cotton yarn and piece goods from Hupeh, also foreign made cotton goods; it imports from Hupeh and Hunan, salt, oils and varnish, and in the old days used to be the centre of a trade in opium. The general articles of export of the province of Hunan are coal, tea, wood, pottery and bricks, silver, antimony ore, hemp, hides, beans and preserved eggs. The imports are cottons and woollens, copper, salt, sugar and petroleum. The commercial movement of the province is important. Through the canal of Yochow-fu alone the annual number of junks sailing to the interior reaches 26,000. Coal, which constitutes the principal wealth of the province, is found in abundance, though it is chiefly extracted at Pingsiang, across the border in Kiangsi. The largest coal beds are in the south, whence it is carried by junks even as far as Shanghai.

Proposed Nanking-Changsha Line. Li K'in-hsi and Yang Sz-ji have forwarded a statement to the President and the Department of Communications giving in detail the scheme for floating a loan to construct a railway from Nanking to Changsha. They state that this railway will start from Nanking, passing through Anhui and Kiangsi to Changsha, in Hunan. As these four provinces are very prosperous they believe that the line will be highly useful and profitable. This proposal is now under consideration by the Department of Communications.

Mukden-Jehol Railway.—The Mukden Tutu received a telegram from Tartar-General Hsiung Hsi-ling to the effect that as rapid transit is absolutely necessary to ensure the success of the Mongolian expedition, a railway be built from Mukden to Jehol. Besides serving as a military transportation medium, the railway is also needed for commercial purposes, and it will greatly facilitate the communication between the two places. The telegram further states that he, General Hsiung, has already asked the Central Government to sanction this step to facilitate military operation, and asks if the Mukden Tutu would join in with him.

Nanchang-Kiukiang Railway.—The work of construction of the railway between Nanchang and Kiukiang in Kiangsi province has begun again and a contractor is wanted to build the line from Tehan onwards.

The Shantung Railway.—The receipts of the Shantung Railway Company for the year 1912 amounted to $3,496,000, or $715,000 more than in 1911.

The reward of £3,000 offered for the best design for the new Howrah Bridge has after all gone to the German Company "Maschinenfabrik Augsberg Nurnberg" which the Committee of Engineers pronounced superior to the rest of the designs submitted. The Port Commissioners, subsequent to the decision of the Committee, so altered the conditions that the German Company's design no longer complied with them, but it was generally felt that the "Maschinenfabrik" had squarely won the prize. This has now been confirmed by the Port Commissioners who at their last meeting passed the following resolution: "That the prize of £3,000 be awarded to the Maschinenfabrik Augsburg Nurnberg A. G."

PROPOSED NANCHANG-PINGSIANG RAILWAY

An office has now been erected at Nanchang, in Kiangsi, to house those concerned in the proposed building of the Nanchang-Pingsiang Railway, which will connect with the short colliery line already running between Pingsiang and Chuchow (south of Changsha, in Hunan Province), which latter point will eventually be a junction with the trunk line from Hankow to Canton. The proposed line will also connect with the line now being built from Kiukiang to Nanchang.

The Assistant Director of the Nanchang-Kiukiang Railway has received a report from Investigating Commissioner Ho Ping-sun in regard to the proposed work on the line, and has forwarded the report to the Kiangsi Tutu, requesting him to appoint officers to carry out the proposal. We give below a translation of Mr. Ho's very full report.

The Report was divided under seven headings, viz., 1, Railway Location; 2, Waterways; 3, Possible river crossings; 4, Materials obtainable along the line; 5, Transportation of Materials; 6, Products; 7, Popular Feeling.

I. *Railway Location.*—There are two big public roads from Nanchang to Pingsiang: (*a*) Beginning from Nanchang to Tsensutsen, 180 *li*; crossing the river to Linkiang. 210 *li;* to Sinyuhsien, 330 *li;* to Feni, 400 *li;* to Ichen 480; *li;* to Pingsiang, 620 *li.* (*b*) From Shatsin to Kao-an, 120 *li;* to Shangkao, 241 *li;* to Wantsai, 321 *li*; to Pingsiang 556 *li.*

The conditions on these roads differ in some respects, and the work on the railway would therefore be different. The length of road (*a*) is 620 *li*; that of (*b*), 556 *li.*

A greater part of road (*a*) is along rivers, while a greater part of (*b*) passes the hills. The riverine region is low, and the soil is not firm. To put up bridges and to fill up low places would entail great cost and much labor, while route (*b*) passes hills which are not very high or rough, and a moderate amount of excavation work will make a suitable road. When compared with (*a*), which will necessitate the building of numerous bridges and culverts, it means that one half of the cost will be saved. Moreover, at Sinyuhsien and Feni, the (*a*) road passes Paoshan (Pao mountains) and Changshan (Chang mountains) respectively, at which points, besides filling up or bridging over the streams, it would also be necessary to cut a passage in the hills, thus doubling the difficulty of the task when compared with (*b*).

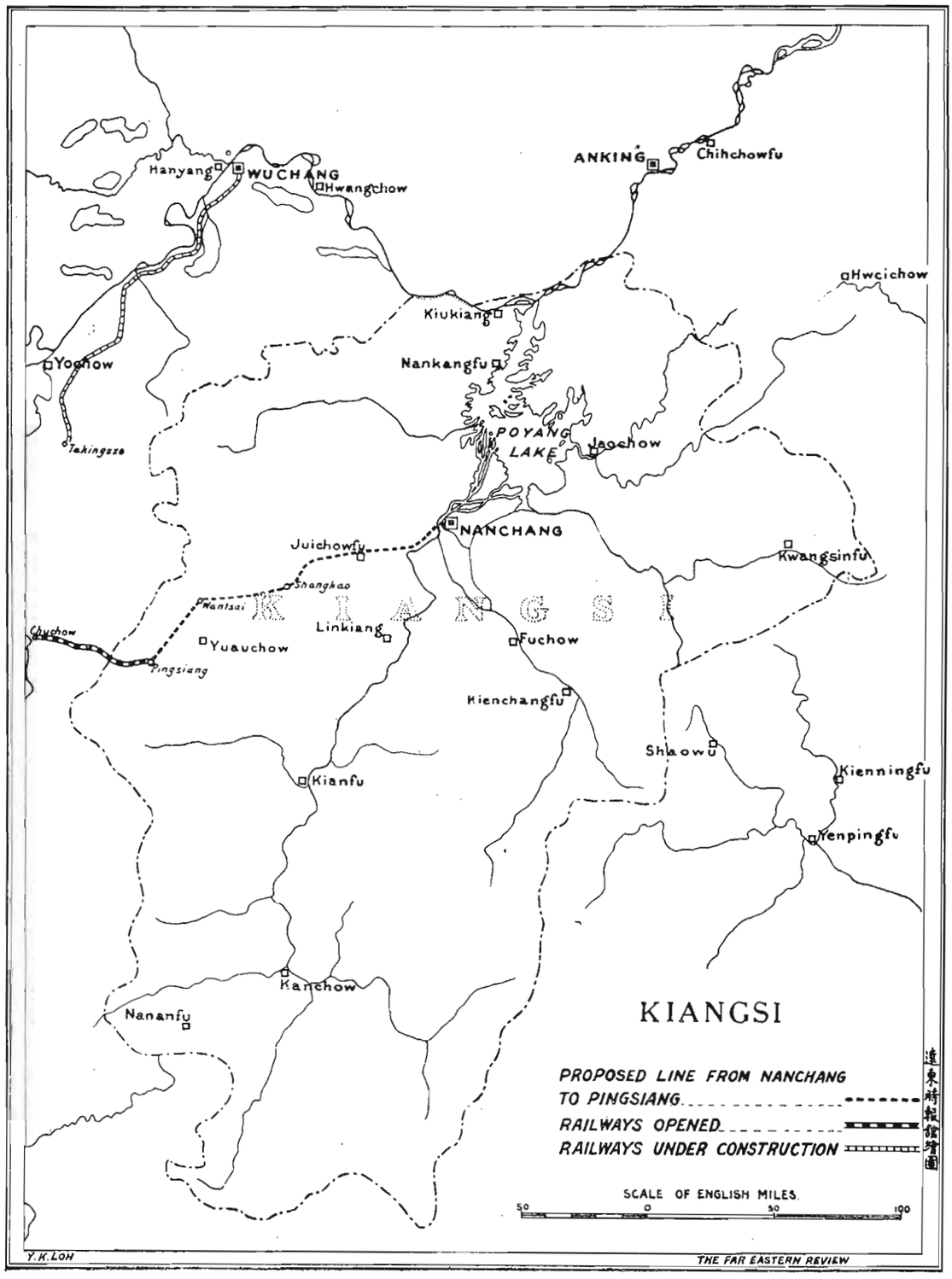
When we look at it from a business stand-point, it seems that road (*a*) has superiority in trade relations. But the real fact is that Linkiang is not so rich in products as is Juichowfu. If in the future it would seem necessary it would be easy to build a branch line to Kianfu, to the south, and then (*b*) line would be much superior to (*a*) in all considerations. There is a great variety and richness in mineral products along the two lines, and whilst the route can run fairly direct, there will not be either very high grades or very acute curves. When looked at from various views, we recommend the (*b*) line as most economical and suitable.

The following is a detailed description of the (*b*) line:

Proceeding from Nanchang southwest from Sha-tsing to Changterling, 10 *li*; thence to Longevity Palace at Si-Shan, still keeping to the southwest, 50 *li*; thence southwest-ward to Kaoyu-sz, 30 *li*, in which section there would be several curves; passing the Jui-Ho (river) to Ho-sha-kang, 40 *li* (this point is 18 *li* from Juichowfu and 70 *li* from Tsingkiang); thence to the southwest, to Yin-kang-ling (hill) 30 *li* (in which section three or four curves would be necessary); thence to Shui-peh-shu, 40 *li*; thence to Kiang-tung-shu, 30 *li*, at which point it is 25 *li* from Sinyhsien, and 70 *li* from Shangkao; thence to Chao-Mokung, 20 *li* (this section is along the foot of the hills and the line is straight; minerals are abundant in the vicinity, but the road is at a high elevation;) thence to Yang-Chiao, 35 *li* (in which section, two bridges must be built, one being 24 feet in length, the other 150 feet); thence toward the south-west, to Hu-Kiang, 20 *li*: thence to Zeh-ling-pu, 20 *li* (which is 60 *li* from Wan-tsai); thence to Huang-Ho, 40 *li*, (where a bridge 230 ft. long will have to be built); thence to Hsuang-fung-tsen, 20 *li* (at which point, the line crosses a stream 300 ft. in breadth); thence to Luchi, 25 *li* (where the line passes a stream 200 ft. in breadth); thence to Ka-kangpu, 20 *li*; thence to Pingsiang, 20 *li*; and thence to Anyuan, 15 *li*. In all the line will cover a distance of 485 *li*.

II. *Waterways.*—The biggest river that the Nan-Ping line must pass is the Siukiang, which has its source at the Yu-Wang-Shan (hills) near Pingsiang, flowing northeast and then east passing Yuanchow-ki and Tai-hungshan, and again southeast passing Feni and Sinyuhsien, and finally to Linkiangfu and Changshu, where it flows into the Kan-kiang.

The second biggest river is the Jui-ho, which rises west of Wan-tsai and passes Shang-kao and Juichowfu, and flows into the Kan-kiang.



III. *Crossing Points.*—At Kaoyu-sz, the point where the railway crosses, the river is 500 ft. wide, and 20 ft. deep; at Yangchiao, the river is 100 ft. wide and 10 ft. deep; at Wangsha, the river is 200 ft. wide and 10 ft. deep; at Hsuanfung-tsen, the river is 300 ft. wide and 20 ft. deep; at Lu-chi-sz, the river is 200 ft. wide and 4 ft. deep. These are the bigger rivers. Besides these, there are twelve streams, the maximum width of which does not exceed 100 ft., and it would be easy to erect bridges. The above measurements of the depths of the canals were made during the low-water season.

IV. *Material ready-at-hand.*—At I-chen, Sindien-chiao and other places, abundant materials like gravel, stones and sand can be obtained Stone masons also can be had, and the work on the bridges may be carried out without difficulty. There is very little timber in the district where the line passes.

V. *Transportation of Materials.*—There is a post road from Nanchang to Pingsiang, and handcarts may be used to transport materials, but such carts can take a load of 70 catties, and not more. As to bridge materials, such as iron, timber, etc., these may be shipped by the water route, from Nanchang to Jui-Ho (river) or Yuan-ho, and then transported overland to the line.

VI. *Products along the Railway.*—The main products of Jui-chow and Kao-an are rice; of Sinchang, paper and flax cloth and high-grade flax; at Wantchai, flax cloth and fire-crackers: at Ichen, charcoal and coal, and copper. These products are turned out in great quantities and constitute very big trades. At present, these are mainly shipped by water; great difficulty is experienced in shipping overland, and when the railway is built, no doubt great development will take place.

VII. *Popular opinion regarding the Railway.*—The gentry class along the line are earnestly expecting the construction of the railway, and the people of Pingsiang are specially anxious to see the line completed as soon as possible. The reason is not far to seek. On account of the proximity of Pingsiang to Hunan, Hunan people are more able to enjoy the advantage of trade relations, and the business in the Pingsiang district is swayed to a great extent by merchants from Changsha. The people realise that if it is difficulty of access to the district that bars the Kiangsi people from enjoying the share they are entitled to of the benefits accruing from trade relations, and that if the railway is not built to bring the various cities into closer relationship, Pingsiang will soon be out of the range of the Kiangsi's people's influence. Pingsiang is well-known as a mining-district, and the mine-owners are most emphatic in their appeals for a railway. Only the ignorant coolie class entertain fear as to the loss of their work after the railway is completed, but this is a groundless fear and may be soon dispelled. So there is no obstacle at all for the carrying on of the construction work.

Supplementing the report, the Assistant-Director of the Nan-zin Railway (Nanchang-Kiukiang) requests that engineers and surveyors be sent to make detail surveys and make accurate maps so that there need not be a second survey, and the work on the line may be carried out as soon as the surveying is done. An appropriation of 300,000 Taels has been allowed. This sum is not enough for the construction work, but it is more than ample for the surveying.

It was suggested that a Railway Surveying Bureau be set up in Nanchang to undertake the surveying of the various lines which sooner or later must be built, such as the lines to Nanhsiung-fu, of Kwantung, to Yu-shan, of Chekiang, and to Nan-ting, of Fukien No doubt such surveys will greatly expedite the carrying out of the actual construction work, which may be started as soon as a favorable decision is arrived at.

Shanghai-Nanking Railway

The following figures of traffic returns (approximately) for the week ended February 22 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	48,656	9,974	58,630
1912....	33,164	2,121	35,285
Increase	15,492	7,853	23,345
Decrease	—	—	—

For seven weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	366,771	63,380	430,151
1912....	381,966	35,138	417,104
Increase.	—	28,242	13,047
Decrease	$15,195	—	—

Week ended March 1:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	55,235	11,703	66,938
1912....	43,993	4,614	48,607
Increase.	11,242	7,089	18,331
Decrease	—	—	—

For eight weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	422,006	75,083	497,089
1912....	425,959	39,752	465,711
Increase	—	35,331	31,378
Decrease	3,953	—	—

Week ended March 8:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	49,627	10,614	60,241
1912....	44,182	4,489	48,671
Increase.	5,445	6,125	11,570
Decrease	—	—	—

For nine weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	471,633	85,697	557,330
1912....	470,141	44,241	514,383
Increase.	1,492	41,456	42,947
Decrease	—	—	—

The week ended March 15:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	52,337	11,962	64,299
1912....	51,373	5,146	56,517
Increase.	964	6,816	7,782
Decrease	—	—	—

For ten weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	523,970	97,659	621,629
1912....	521,514	49,385	570,899
Increase.	2,456	48,274	50,730
Decrease	—	—	—

The Lo-tung Line and Nationalisation

Mr. Kin Chi-ji, a shareholder of the Lo-tung Railway, recently sent the following telegram to the Government:—"The Haichow-Lanchow Railway is a great and important trunk line, traversing a distance of 4,900 *li* and it will be urgently needed for both military and commercial purposes. The Lo-tung Railway is one of its middle sections, and since the trunk line is to be owned by the nation, we request that the Lo-tung Railway be also put under Government control. This step is most urgent in view of the fact that all funds of the line have now been spent, and since the Revolution the market has been in so strained a condition as to be unable to supply the line with money, and the only means by which to carry on the work is to float loans. Whether the loan is to be floated by the Government or the merchants, the process is identical, but the result would be widely different. During the recent few years, most of the shares have been purchased with the proceeds of an additional salt tax, and shares that were bought by other people form but one-third of the whole. The Lo-tung Railway Company have now tried to effect a loan clandestinely with a company in Tientsin, giving the whole section as security for £500,000. When the Government ordered the Company to cancel the loan, the Company tried to evade the order, on the pretext that they will ascertain the wish of the shareholders. According to the Company's regulations, there is one vote to every hundred shares, and all small shareholders may combine and obtain a vote. Most of the shares were distributed by the Magistrate and the receipts or share certificates were deposited with the Company, so that when a shareholders' meeting is called, it happens that one man may have several hundred votes, and of course everything can be managed in any way he likes. In their attempt to disregard the Government's order the so-called shareholders' meeting will be organised in this way. We earnestly request the Government to send a Commissioner here to take over this Company." The above telegram was signed by 157 men aggregating 25,000 shares.

MESSRS. J. DAMPNEY & CO.

Messrs. J. Dampney & Co. of Cardiff and elsewhere have sent us copies of their 8th Edition Booklets dealing with their "Apexior" Compound, "Miraculum" Graphite Paint, and "Asphaltene."

"*Apexior*" *Compound.*—The list of important users at the back of the booklet is of great interest. We observe that the majority have placed repeat orders. It appears that "Apexior" will absolutely stop corrosive pittings in steam boilers, whilst scale is rendered nonadherent owing to the peculiar nature of the surfaces presented by "Apexior" and is removed by lightly tapping with a flat faced hammer or a wire brush.

"*Miraculum*" *Graphite Paint.*—This is a highly efficient coating for all kinds of Iron and steel work where decorative effect is needed. It has proved particularly useful for corrugated iron as it will withstand climatic influences.

"*Asphaltene.*"—A highly efficient covering for all kinds of iron and steel work subject to unusually trying conditions, that is, submerged or underground, exposed to acid or alkaline fumes or liquors which it is claimed Asphaltene will absolutely resist. It is also a cheap and efficient covering for any kind of work where the color black is suitable.

Booklets relating to the above are at the disposal of persons or firms who may be interested.

CANTON-KOWLOON RAILWAY

THE TERMINAL STATION BUILDING AT KOWLOON POINT

A terminal station building and a passenger station yard are to be constructed at Kowloon Point, the terminus of the railway from Canton to Kowloon, by the Hongkong Government. We take the following particulars from a Hongkong paper:—

The station yard will extend over an area of some 11½ acres from Holt's Godowns at Blackheads Point to the present Kowloon Ferry Pier, on the south side of Salisbury Road. Provision is to be made for a double line of way from Hung Hom, spreading out to

7 or 8 lines of way on entering the station yard. Only 2 or 3 lines of way will be laid in the first instance, further lines being laid as requirements necessitate.

A new ferry pier is to be constructed half way round the curve in the sea wall at Kowloon Point capable of accommodating two ferry boats at a time, and when completed, will release the present ferry pier for Police and Public purposes.

There will be a large open area between the Praya Wall and the station building, as it is fully recognised that Kowloon is as yet in its infancy and that tramways, motor cars and other wheeled vehicles must have ample space provided for their accommodation.

The station building itself, which will be of brick and granite, is to be a monument worthy of the Colony; it will stand out alone in the foreground of Kowloon as seen from the Harbor and Hongkong and will present a bold and imposing appearance. Of two stories high the massive coping will be supported on a series of tall columns about 30 feet high, on the sides facing west and south; while the Clock Tower, 130 feet high, situated at the south west corner, will undoubtedly enhance the appearance of the building, and manifestly distinguish it as the principal and most important structure in Kowloon.

The portico, in the form of an advanced collonade, will be some 60 feet by 14 feet and allow passengers to enter the building in wet weather from their vehicles, under shelter, while a further covered way will reach from the Clock Tower to the Ferry Piers.

On entering the building by a flight of some four or five steps one is immediately confronted with the Customs office and Barriers, first and second class passengers moving one way, third class the other, through wicket gates into the vast covered concourse some 150 feet by 80 feet in the centre of which are the booking offices, and beyond more wickets are the various platforms, of which there will eventually be three, all capable of receiving a train on each if necessary.

On the ground floor accommodation is provided for Station Masters Office, Telegraph and Parcels Office, First and Second Class Waiting Rooms, (General, and for Ladies), First and Second Class Refreshment Room, Third Class Waiting Rooms, and Third Class Refreshment Room, Customs Officers' Room and Strong Room, Rooms for Police, Porters, Guards, etc., Railway Post Office and the Traffic Superintendent and the Traffic Clerks Office.

By a stair-way under the Tower the second storey is reached on which will be accommodated the various offices of the Railways Administration.

It is intended to provide an electric clock in the Tower with large faces, and regulated automatically every hour by electricity. From the flag staff on the top will be shown the Night Harbor Police-Signals, as the Tower will hide the present Police Signal Staff from some parts of the Harbor.

The building will be capable of extension on the south side in the direction of Blackheads Point.

The scheme has been submitted to Members of the Executive and Legislative Councils and they have unanimously approved it.

Kirin-Changchun Railway

The Kirin-Changchun Railway was completed on October 20th, 1912. Since that date the traffic service has been started and generally has proved satisfactory. But the Railway authorities felt that they are not giving the maximum efficiency and that there are defects in the equipment of the line. It has been decided that the following works on the line be carried out within this year:—

The mountain at Tumenlin is very high and rugged and the engineers have two schemes: one to make a tunnel, and the other to make a cutting. As it will require a long time to cut the tunnel, it has been decided that for the time being the line will follow the present longer route, and as soon as the weather gets warmer, the work on the tunnel will be started. The original estimate of the cost for the cutting of this tunnel was $180,000, but it is now placed at $200,000.

The Kirin-Changchun line is 80 miles in length, and only three stations have been built. There are small stations on the line, but these are of a temporary nature and not adequate for the handling of merchandise. It is proposed to rebuilt these stations. The funds required were estimated at $10,000. The necessary materials have already been procured, and the work will be started in May.

The workshop now in use is not equal to the demand, and it is proposed to put up a new workshop at Changchun. Two engine sheds are also to be built. This will also be carried out within this year.

Out of the monthly income of $70,000 of the Kirin-Changchun Railway a sum of $50,000 is appropriated for the running expenses and the remaining $20,000 to pay for the materials already bought, and other incidentals. There is no surplus, and the Company is approaching the Department of Communications for money to carry on the needed work on the line. If the Department does not give any help, the work will have to be put off till next year. If the Department gives sufficient funds, the railway might be extended to the bank of the Sung-Hwa-Kiang, where a wharf will be built.

Mr. Yu Yu, the new Director of the Kirin-Changchun Railway, arrived at his post on March 3. Mr. Sun, the outgoing Director, intended to leave Changchun for his home in the South the following week.

Chinese Eastern Railway

The railway has a total mileage of 1,081. Below we give figures showing the comparative returns for 1911 and 1912:—

			Yearly returns	
	1911	1912	1911	1912
			Rbls.	Rbls.
Passenger traffic (passengers with free passes not included)	1.208.953	1.660.533	3.451.608,96	4.241.713,69
Luggage	Pouds 243.057	Pouds 285.032	117.178,23	106.851,02
Goods transported by fast and passenger train	Pouds. 667.855	Pouds. 1.225.449	279.841,55	441.097,03
Goods transported by slow trains	Pouds. 88.045.651	Pouds. 75.108.242	12.596.225,26	12.092.963,01
Supplementary revenue and sundries	—	—	3.132.575,51	2.170.202,65
Total	—	—	19.577.429,51	19.052.737,40
Expenditure	—	—	16.460.082,18	
Net profit	—	—	3.117.347,33	

Kwangsi Railways.—The Kwangsi Tutu had wired the Government to the effect that the French demand a share in the building of Kwangsi Railways, and that no argument he could use could induce them to abandon their desire. He asks that the Foreign Office be instructed to deal direct with the French Minister.

MANCHURIA

South Manchuria Railway

The South Manchuria Railway Co. has secured the sanction of the Finance Office, Tokyo, for the proposed investment of about Y.14,100,000 as capital expenditure for the fiscal year 1913. Among the principal items are included the following:—

Foundation work for New Quay to the west of Main Quay, Dairen. (The first annual instalment).	about Y.200,000
Experimental Bean Mill (attached to Central Laboratory). Y.200,000 for machinery and installation, and the balance for building expense.	about Y.240,000
Construction of two coasting cargo steamers for charter to the Dairen Steamship Co.	about Y. 60,000
First annual instalment for construction of new premises of Central Railway Hospital, Dairen. Foundation work and Isolation Ward.	about Y. 80,000
Sand-flushing equipments for Fushun Colliery.	about Y.650.000
Extension of Central Laboratory.	about Y.200,000
Construction of a round-house and 2nd class sleeping cars.	about Y.200,000
For establishment of Agricultural Experimental Station at Kungchuling.	an indeterminate sum of money.
Equipments and improvements of Y mate Hotels at Dairen and Mukden.	" "
Re-construction of various station buildings.	" "
Harbour works at Dairen, Antung, and Yingkou.	" "

The company may call up the balance of the subscribed share capital amounting to Y8,000,000. The Company must make up somehow the deficit of a little over Y.6,000,000 in order to defray the required capital expenditure. It proposes to set aside under the head of special reserve Y.2,000,000 from the profits of the current fiscal year. The sum and substance of the question confronting the Company is how to raise the remaining Y.4,000,000. It is most likely that recourse will be taken to an increase of the Company's share capital, and additional shares will be offered for subscription.

The S.M.R. Traffic Returns for the month of February totalled Y.1,783,390, being an increase by Y.208,919 over the corresponding month of last year. The daily average for the month was Y.63.692.

Hulan-Suihua Line.—The *Manchuria Daily News* reports that the Foreign Intercourse Office at Harbin has telegraphed to Gov. Chen, at Kirin, in the following sense:—"Lieut.-Gen. Horwath, Director of the Chinese Eastern Railway, Harbin, has proposed that the long pending question of laying a light rail line between Hulan and Suihua 75 miles distant from each other, requires an early settlement. As the nature of this question does not admit of its being shelved altogether, so says the General, he intends to send out a party of about twenty surveyors and engineers along the proposed route, leaving open the question whether the Russian or the Chinese authorities shall undertake the construction of the light rail line." This telegram has added that the Russian proposal has been refused. Much curiosity is evinced as to how the Russian authorities will take this rebuff. The uninterrupted expanse stretching between Hulan and Suihua (known also as North Tuanlintzu) is conceded to be the most fertile plain in Manchuria, and half the wheat put on the Harbin market is supplied from this rich granary. Russian merchants and their agents travel in this part of country constantly during the produce season, and it is about this same district that the Russians wanted to deal with the bandits operating boldly therein by means of their own troops.

Mukden-Jehol Railway.—The Mukden Tutu, Chang, agrees with the proposal of General Hsiung Hsi-ling, to build the Mukden-Jehol Railway. He has assisted him to carry forward this project and has joined him in sending a telegram to the Government urging an appropriation and early start on the work.

JAPAN

State Railways of Japan.—The net receipts of the Japanese State railway lines for the current fiscal year are given at about 17,000,000 yen up to the end of February, an increase of about 2,000,000 yen over the estimate of 15,000,000 yen. Estimating the net receipts for March at some 1,200,000 yen the total receipts for the present fiscal year will be more than 18,000,000 yen.

Traffic on Japanese Lines.—Goods traffic on the Japanese railways, which was very active during October, November and December—more so than in the corresponding period of any proceeding year—was greatly depressed in January, the falling off amounting to 15 per cent. from the figures for January last year, and this depression continued last month. This diminished traffic is attributed to bad sales of New Year goods in the interior for the old-style New Year. The daily average dispatch of goods from Umeda Station, Osaka, has been not more than 250 car-loads lately, a decrease of between 80 to 100 cars from the figures during the busy time above referred to. Such a depression in goods traffic from Osaka has not been seen for many years. Recently the regular fertiliser season opened, and summery goods are also beginning to come out; as man as 320 cars are frequently required daily for goods sent from Umeda. The carriage of summer goods is expected further to increase, and the opening of the Toyama-Naoyetsu Railway on April 15th will increase the goods traffic to Nigata prefecture.
Far Eas. Rly. Ch.

Russo-Japanese Traffic Agreement.—According to Mr. Yoshikawa, Vice-Councillor of the Japanese Railway Board, who with Councillor Hoki attended the Russo-Japanese Railway conference at St. Petersburg, a most successful outcome is anticipated. About the end of March the Vice-President of the Eastern Chinese Railway, its adviser, the head of the Commerical Section, and others, numbering probably five in all, were expected to arrive in Japan to hold a conference in Tokyo with the Japanese authorities. The active operation of the new service will be begun about August next, and preparations have so far progressed that the list of through freight charges has already been drawn up by Japan, and the Russian authorities are ready to apply for the sanction of the Minister of Communications to their scale. The stations between which this new freight arrangement was to exist were first estimated at fifteen, but, as a result of the conference, the stations were fixed as follows:— Russia:— Vladivostok, Nikolaievsk, Harbin, Khaborovsk, Imenpo, Ajibe, Tsitsihar, Manchuria, and Hailor. Japan:— Shimbashi, Yokohama, Nagoya, Kioto, Osaka, Kobe, Tsuruga, Shimonoseki, and Moji. As the immediate result of the opening of this service, 2,000 tons of cotton and about 1,000 tons of miscellaneous goods will be sent to Harbin and neighbourhood, and in future about half the goods now being sent to Vladivostok via Tsuruga will be sent through Tairen.

MONGOLIA

Kalgan-Urga Line.—According to the estimate of engineers despatched by the Ministry of Communications, it is reported that an amount of about two millions and a half is enough for the construction of the important Kalgan-Urga Railway. The Ministry has brought up the question before the Cabinet Council and it is strongly supported by the Premier.

KOREA

Light Railway in North Chosen.—According to a report received by the Seoul Press from Songjin in North Hamkyongdo the Collbran-Bostwick Development Company had planned to construct a light railway between their mines at Kapsan and Songjin via Kilju, and carried out a land survey for that purpose a few years ago. The district between the two places, however, being mountainous and communication difficult the Company deemed it better to execute the plan after the completion of a highway between Songjin and Heisanchin, which was started at the end of 1911. Now that the construction of the highway is nearing completion, the report says, the same company has decided to execute the long cherished scheme of laying a light railway between Kapsan and Songjin, 70 miles in length, and is going to send in an application for permission to the authorities concerned. The chief object of the Company in laying the line is to transport ore from the mine to the harbour of Songjin, and it is not yet decided whether the line will be available for general traffic.

MALAYA

Federated Malay States Lines.—The *Malay Mail* of January 31 says:—We believe the idea of double-tracking the line between Kuala Lumpur and Port Swettenham has been kept in view for some time past and the question naturally arises whether it would not be advisable to electrify this section of the line. Then instead of working the traffic with long, cumbersome goods trains at rare intervals, short trains of four or five trucks could be despatched every half hour. It would take less time to load and unload these short trains and consequently the working capacity of the rolling stock would be much increased.

The Kedah Railway

An excellent example of the method of railway making in Malaya is afforded by a visit to Mertajam, from whence the new line to Alor Star is being constructed. Mr. H. J. Highfield is the engineer in charge of the section.

The work now extends to the fortieth mile. Another engineer is expected shortly at Alor Star to commence the earth works at that end. In the district of Bukit Mertajam the work is rapidly assuming the appearance of a railway line. For several miles the cutting and levelling has been effected, and good progress is being made with bridges and crossings. Several hundred yards of rails have already been laid, but this early start was in order to facilitate the removal of material from the railway station to the workshops. The soil is in every way suitable for working, and it has been necessary to do but very little blasting. The whole work in fact has suffered few hindrances. Heavy rains hampered the work somewhat, but considering the comparatively short time operations have been in progress really remarkable work has been effected. Although work at the rail-head section commenced nominally last April it was limited to a portion of an estate near the station, and it was not until November 4th that a connected link through the Province was established and the work proper begun. In all there are thirteen bridges on the first seven miles of the line, and all of them are now nearing completion. In jungle work it is customary to leave the bridges until the last, but in the present instance the carting and general facilities have been exceptionally favourable. From Bukit Mertajam to the Muda River, indeed, the course lies mostly through *Kampongs*. The bridge over the Muda River will be 850 feet in length, and will be the largest in the F. M. S. A telegraph is at work. The works have their own mail system, relays of runners taking communications from Bukit Mertajam through the forty miles covering the six sections. In the workshops Chinese tukangs are employed making practically every article of furniture that will be required for equipping the new railway. Indeed, everything except the actual railway metals appears to be made here—desks, seats, ticket compartments, ladders, tables, etc.: whilst Bengali blacksmiths fashion the iron and steel fittings, railings and various other material required for the level crossings, etc. Several score of men are employed in the workshop but the total employed at the rail head section averages a thousand. Bukit Mertajam Station is to be completely remodelled, and there is every likelihood of the township itself becoming a highly important centre in the near future. A double platform, with an overhead bridge, is to be built and the track will be duplicated to Prai. A signal cabin is to be constructed, and plans have also been prepared for new permanent quarters for officials on the Hill and additional coolie lines. The huge swamp, covering some four acres, immediately to the right on leaving the station, Mr. Highfield has had filled up, and a goods yard, with a road leading to it, is to be constructed. Although there has been comparatively little sickness among the men employed on the work the precaution has been taken to secure special hospital accommodation. A temporary ward has been built and furnished in the Hospital grounds and placed under the control of the Assistant Surgeon.

WIRELESS IN THE PHILIPPINES

One month from the date of completion, the wireless station of the bureau of posts erected at San Jose, Mindoro, got into communication with the Zamboanga wireless. The distance covered by this wireless is over 360 miles. The San Jose wireless station is not used for wireless communication with Zamboanga, as there is communication with the Cuyo wireless station, which is only 160 miles from Zamboanga station, but is used for communication to and from Mindoro. The plant is a 3½ K. W. and is the seventh wireless station to be erected by the bureau. The other stations are at Zamboanga, Jolo, Malabang, Cuyo, Puerto Princesa, and Davao. It is understood that the next plant erected will be a very large one for Manila.

PERSONAL

Sir John Jordan, H.B.M. Minister at Peking, is taking four months' leave during the coming summer. He will probably depart from Peking on or about June 6. During his absence Mr. Beilby F. Alston, of H.B.M.'s Foreign Office, will officiate as British Chargé D'Affaires. Mr. Alston is expected to arrive in Peking in May.

The Chinese Minister to Paris, Mr. Hu Wei-teh, left Shanghai for his post on February 21 on the Messageries Maritimes steamer Ville de la Ciotat.

The Ministry of Communications has appointed Hwang Kai-wen Chief of the Railway office of the Southern section of the Kin-han Railway.

His Excellency Count J. de Limburg Stirum, Envoy Extraordinary and Minister Plenipotentiary for the Netherlands, who will take the place of his Excellency Jhr. Beelaerts de Blokland during his absence on leave, arrived at Peking on February 15 by the Mudken express, accompanied by the Countess.

Mr. Tetsujiro Shidate, formerly Manager of the Sumimoto Bank has been appointed President of the Industrial Bank of Japan in succession to Mr. Juichi Soyeda.

Mr. John S. Hord has been re-elected President of the Bank of the Philippine Islands. The following gentlemen were elected or re-elected to serve on the board of directors: Enrique Barrera, Maximiano Paterno, Edilberto Calixto, Phil. C. Whitaker, Thomas L. Hartigan, Félix Roxas, Leopoldo Criado, Francisco Cavero, Eduardo Díaz Pérez, Miguel Velasco, and José M. Garcia Suárez.

Mr. H. M. Rumbold, Councillor of the British Embassy at Tokyo, expects to leave for home next month. It is possible that he may be appointed Minister to Chile, which post is now vacant.

The death is reported by cable of Mr. A. R. Brown, honorary Japanese Consul in Glasgow and for many years in the employment of the N.Y.K.

Mr. Larz Anderson, the American Ambassador, and Mrs. Anderson left Tokyo on an extended holiday trip in Japan, Mr. Anderson having received leave for the purpose On the conclusion of their tour they started on their return to the United States, after which their movements are uncertain.

Mr. J. H. MacLaren, of the Hongkong and Shanghai Bank, has been transferred from Shanghai to Yokohama, where he will be sub-manager of the Bank's agency.

Dr. Sun Yat-sen, after a most successful visit to Japan, returned with his party to Shanghai at the end of March.

Mr. J. W. Bolles, Manager in the Far East for the Standard Oil Co., returned to Hongkong on the 5th March. Mr. Bolles has been on vacation in the United States.

A marriage has been arranged and will take place at Berlin early in April, between Mr. C. N. Meyer, accountant of the Deutsch-Asiatische Bank at Hongkong (now on home leave) and Miss Elsa Hake, daughter of Mrs. R. Fuhrmann, of Hongkong.

WU CHING-PIEN, PRESIDENT OF THE PRESENT NATIONAL OR ADVISORY COUNCIL. MR. WU WAS NOMINATED FOR THE POST OF MINISTER FOR EDUCATION AFTER THE REJECTION OF MR. TANG HUA-LUNG

TANG HUA-LUNG, VICE-PRESIDENT OF THE PRESENT NATIONAL OR ADVISORY COUNCIL. MR. TANG WAS NOMINATED MINISTER FOR EDUCATION, BUT RATIFICATION OF THE APPOINTMENT WAS REFUSED BY THE NATIONAL COUNCIL BY ONE VOTE

Mr. J. B. Rentiers, British Consul at Tamsui, Formosa, has been appointed Consul at Hawaii. Governor-General Viscount Sakuma, says a Taipeh dispatch, entertained Mr. Rentiers at a farewell reception.

Mr. J. Barendrecht, Dutch Consul at Kobe, has been appointed Consul-General at Calcutta.

The Japanese Foreign Office is informed that Dr. Rhomberg, the new Councillor of the German Embassy, formerly attached to the Legation in Venezuela in the same capacity, will reach Tokyo early in April when he will replace Mr. von Radowitz, who has been appointed Councillor of the Embassy at Paris.

Mons. Etoret, chief of the French Post-Office at Peking, has returned to the capital from home leave, and was welcomed heartily back by his many friends and compatriots.

Mr. Edward Bowditch, Jun., has been appointed Secretary of the Moro province, Philippine Islands.

Sir W. Conyngham Greene, K.C.B., the newly appointed British Minister to Tokyo, arrived at his post, accompanied by Lady Greene, on March 5.

Mr. A. H. Keable, Manager of Messrs. Samuel and Co., Dairen, returned to Dairen on March 1 from England, via Siberia.

Mr. G. N. Courtney, of Messrs. Butterfield and Swire, Hongkong, arrived at Dairen on March 1 to take over charge of the firm's local branch.

Mr. Toyotaro Isomura, former Chief of the London office of the Mitsui Bussan Kaisha, has retired from the Company, and entered the Hokkaido Colliery and Steamship Company. In consequence, Mr. Kaneo Nanjo, Chief of the Osaka branch of the Mitsui Bussan Kaiha, has been mada Chief of the London office, Mr. Kamenosuke Fujino, Chief of the Cotton Department, succeeding Mr. Nanjo as Chief of the Osaka branch.

The appointment of Mr. E. Shellim to be an Unofficial member of the Legislative Council, Hongkong vice Mr. Osborne resigned, has been gazetted.

With the approval of the Italian minister at Peking, Mr. d'Angelo has been appointed adjudicator for public works and construction in the Italian Concession at Tientsin.

Mr. Hisaaki Hijikata, Director of the Bank of Japan, returned from London to Tokyo on February 28.

Mr. Eduardo Ruiz, First Secretary of the Chilean Legation at Tokyo has been transferred to Brazil in the same capacity.

Mr. J. Valenti, the new French Vice-Consul at Yokohama, has arrived in Japan.

At Hankow Mr. M. Trouillet has taken over the management of the Banque de L'Indo-Chine from Mr. Dezaunay, who is transferred elsewhere.

The staff of the Tientsin Technical College has been increased by the addition of Dr. E. Rusch, formerly Professor of Electricity in the Zurich University.

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. IX. SHANGHAI AND MANILA, APRIL 1913 No. 11

THE LUNG-TSING-U-HAI RAILWAY

Description of the Projected Line from Lanchow to the Sea

The most important railway that has been projected in China for many years is that which is destined to connect the sea with Lanchow, the capital of Kansu Province. It will pass through four provinces, Kansu, Shensi, Honan and Kiangsu, and therefrom it derives its name, the "Lung-Tsing-U-Hai Railway"—"Lung," meaning Kansu, "Tsing," Shensi, "U," Honan, and "Hai," the sea. A loan of £10,000,000 was arranged in September for the construction of this line, and on March 31, the first portion of that amount was raised in Belgium. Subscriptions were invited for £4,000,000, and it is stated that subscriptions were sent in for £6,000,000. The Agreement for this loan, which was published in the January number of the FAR EASTERN REVIEW, sets out that it is for the construction and equipment of a trunk line which will connect Lanchow-fu (the capital of Kansu province), in the west, to a seaport, to the north of the Yangtsze River, in the east, making use of the already constructed Pien-lo and Lo-tung sections, and eventually the Tsing-kiang-pu railway branch, and passing through Sian-fu (the capital of Shensi province), Tung-kwan, Honan-fu, Kaifeng-fu (the capital of Honan province), Kweiteh-fu, and Suchow-fu in the province of Kiangsu, to the sea.

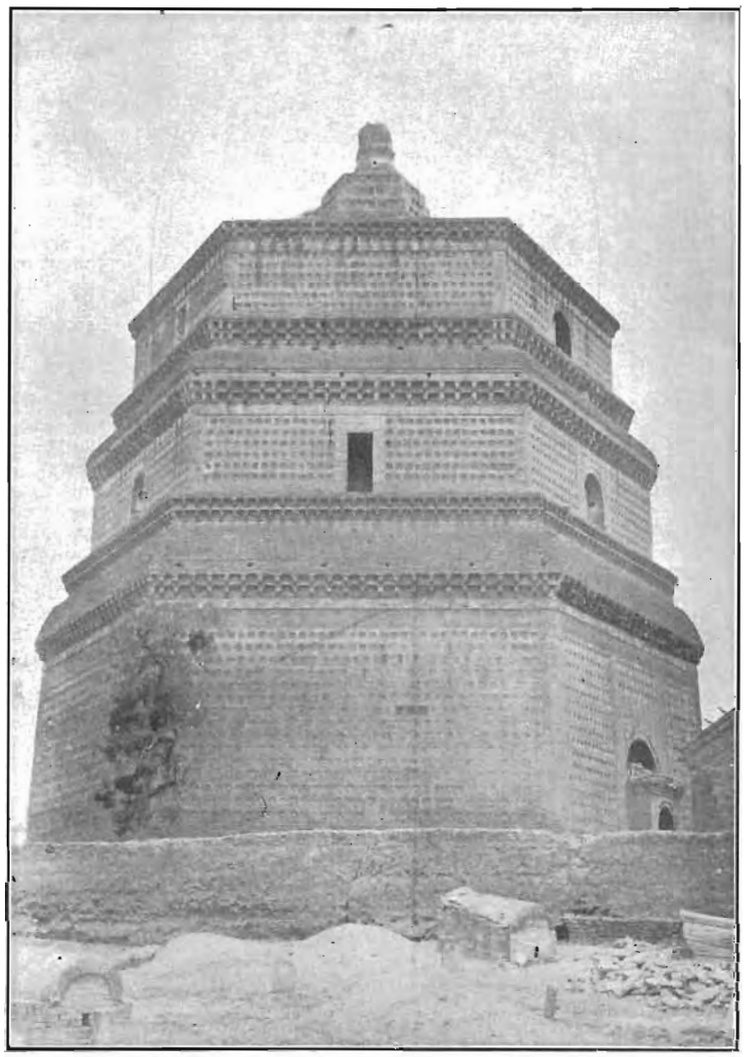
The railway will pass through one of the most important sections of China on its way from Honan westwards, by following the famous Tungkwan road. This is probably the greatest military road in China, and is supreme in importance in a strategical and political aspect, as it mediates without exception the natural traffic between the southwest of the Republic and Peking, together with the whole north-east. By traversing the Tungkwan road to the west the equally famous Wei River valley is entered.

All the historical, political, strategical, commercial, and social interests of North Shensi centre in this large loess basin, through which lies the lower course of the Wei River.

The Wei River is the largest affluent of the Yellow River, and is navigable for very small boats from its mouth to Hanyanghien, a lively commercial place 14 miles west of Sianfu, and 140 miles from the mouth of the River.

The Wei River is bordered on its south side for from one to sixteen miles by high mountain ranges. In some places it is separated from rock precipices only by a low and level terrace made up of strata of regenerated loess, and impregnated with alkaline salts; in others true loess occupies the intermediate spaces and covers the surface to a great altitude.

North of the River, the ground rises gently.



THE PUEH TOWN AT KAIFENG-FU

As far as the eye can reach, there is a gentle rising plain of loess, slight swellings in the distance marking the position of hills covered with loess, which expose their rocks only in gullies.

This is the very centre of the loess region. The province is practically covered by an almost continuous sheet of loess of great thickness. Everything is yellow, even the atmosphere is seldom free from a yellow haze which is due to diffusion through it of fine dust or loess.

The Wei Basin forms the greatest agricultural country in the north-west, and to this circumstance, next to its geographical situation, it owes the prominent part which it has played in the history of China, especially in its early epochs.

Immediately upon entering the Wei Basin from the east the impression of its peculiar position is vividly conveyed to the traveller. He finds himself suddenly arrived at a point of view from which he believes to see spread out before him, like a map, an immense portion of Central Asia with its roads and routes of commerce to Turkestan and Ili, its peculiar and equally exceptional political conditions, and its turbulent history, marked by the periodical fluctuation and displacement of nationalities and spasmodic events, many of which resulted in an unparalleled destruction of human life. Most of these gigantic movements reacted powerfully upon the region of which the Wei Basin forms the central and most important portion, and some of them actually extended with all their terrors to the Tungkwan Gate.

In the Wei River Valley, in the centre of Shensi, stands Sian-fu, the capital. This may be considered one of the most important cities in China not only because of its historical reminiscences, but also because of its site, the number of inhabitants, and its wealth. Shensi is considered the cradle of the Chinese race, and commands all passes to the great western plains, leading to Central Asia, and, thanks to the Szechuan road, it connects easily with the south of China.

Sian-fu was founded in the 12th Century B C., and was the capital of China for upwards of 2,000 years. It has suffered many reverses of fortune and during the Mohammaden Rebellion was besieged for two years. Its walls enclose a square space of six geographical miles, and the gateways of the city are described as being even more picturesque than those of Peking.

Sian-fu acquired its greatest celebrity during the T'ang Dynasty. It was then called Siking (Western Capital). In 1900, when the Boxer Insurrection broke out, the court withdrew

MOSQUE AT SIAN-FU

MOSQUE AT SIAN-FU

there for a time. A short distance from it, towards the east, the Annals of Confucius, and persons familiar with them, were burnt under Emperor Shih Hwang-ti (246-209 B.C.) The Mussulmans, who are said to have arrived there about the VIIIth century, occupy quite extensive quarters, and have a famous mosque. Not far from the city, towards the west, is found a slab bearing date from the VIIIth century, and testifying that the Nestorians, an heretical Christian sect, were established there at that time. A celebrated museum, called the Peilin (forest of slabs or stone tablets) is rich with the remnants of ancient civilization. The city has its Tartar quarter, which is surrounded by a high wall. In the centre of the town, there is a large agglomeration of petty shop-keepers. The Eastern suburbs is a very populous and rich quarter where cloth, silks, porcelain, foreign-made articles and iron are stored. In the year 1899, a cotton mill was established within the city.

Sian-fu occupies a dominant position because it is situated at a confluence of the few roads of travel which are the only possible connections for mediating the intercourse between the Wei Basin and the western and northern provinces, and occupy there in some measure, the place of rivers.

The only practical means of easy and cheap ingress to this region, and through it to places far more remote, is the proposed railway from Honan-fu to Sian-fu and beyond. The physical features of Western China allowed of this one and no other passage. There is, it is said, not one possible in the south or in the north except

MR. S. C. SZE, DIRECTOR-GENERAL OF THE LUNG-TSING-U-HAI RAILWAY

through Suin-hai-fu, and southern Mongolia, which is, however, through sparsely inhabited and almost unproductive regions.

The only part of the country between Honan-fu and Sian-fu which presents any difficulties lies between Tiemen and Shenchow. From Shenchow to Tungkwan, there are no other difficulties than the bridging of rivers. The rivers are deep and the plateaux are high.

Tungkwan will probably be a great station in the future as it will naturally be the crossing point of the line proposed from Taiyuan-fu in Shensi.

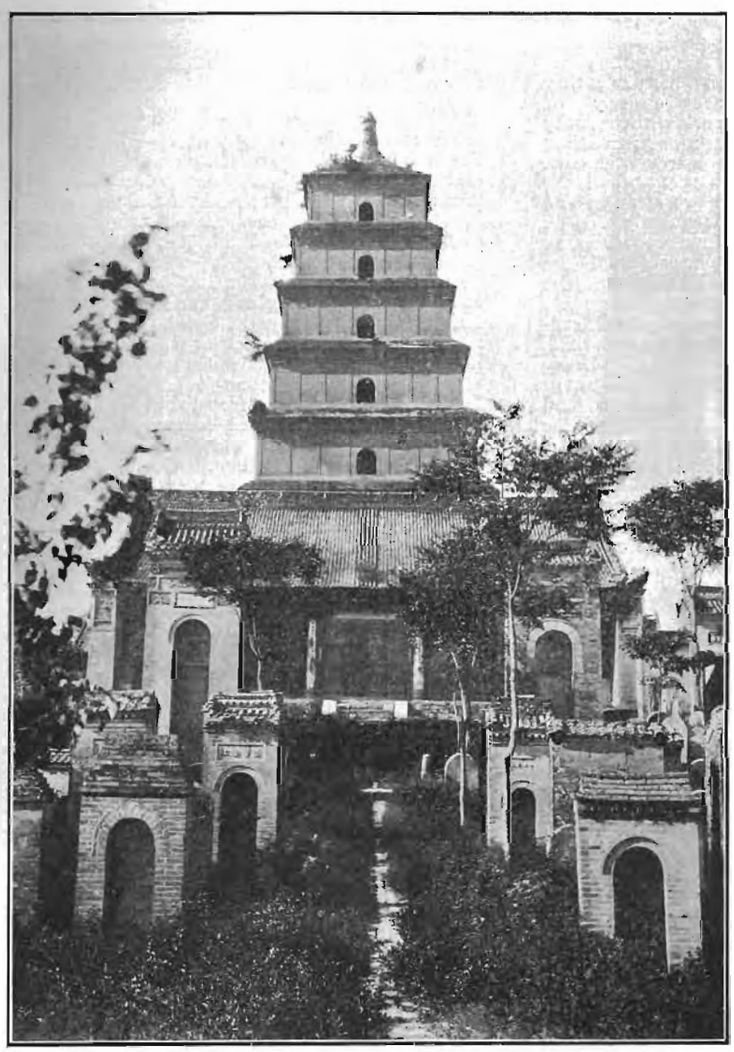
From Tungkwan to Sian-fu, a distance of about 80 miles, the country is flat, and when the line is ready as far as Tungkwan, the rest of the distance to Sian-fu should be covered in six months.

In two years' time the Construction Company should finish the line to Tungkwan, and, within three years, it should be open to traffic to Sian-fu. That is, if there are no difficulties other than those concerned with the actual building of the line.

At Lingtung-hsien, near Sian-fu, it is interesting to note *en passant*, there exist sulphur springs which may in time become famous, especially owing to their proximity of the railway. They have been used by emperors in the past and already there are a large number of buildings there which are used by those who visit the springs to bathe. Chinese people travel long distances to bathe in the waters, and with the advent of the railway they should become popular and a source of profit to the provincial government.

MONUMENT OF HUA SHAN, TUNG-KWAN

DRUM TOWER, SIAN-FU



TA YIEN TOWER, SIAN-FU

From Sianfu to Lanchow there are two roads, which may be followed by a railway. One is the cart road, called the North road, which goes through Sienyang, Kienchow, Pinchow-she, Pingliang-fu (Kansu), Tsingning-chow, Anting-kan, and to Lanchow. This road is a convenient one, with a few difficult passages.

The other road, which is called the South road, passes through Sienyang, Fengsiang-fu, Paoki-hsien, Tsinchow-kan, Kungchang-fu, Titao-chow, and to Lanchow. This road is mountainous and difficult and only practicable for pack animals. It is a cart road only from Lanchow to Tsin-chow.

The distance between Sian-fu and Lanchow-fu is about the same by either route, and is given as 360 miles. The following information is taken from a reconnaissance made by Colonel Mark S. Bell, of the British Army.

From Sian-fu by the North road a broad cart way traverses a plain growing wheat, peas, and vetches. Villages in ruins are constantly passed, and there are no indications of wealth in this rich agricultural valley. Nine miles from Sian-fu the Wei valley is some 40 to 50 miles broad, and it stretches to the north-west some 70 miles, where the undulations break up into hills rising from 500 to 1,000 feet over ravines, and on the other side of them, about Pinchow-she, wheat is plentifully grown on the elevated plateaux. Trees and shrubs are remarkably few.

For 210 miles to Lungtehsien there are no outstanding difficulties to railway construction, and there the ascent is gradual to Wating-fu. Beyond Lungtehsien the hills traversed are much more intricate and out of cultivation. These offer no great obstacle to the construction of a line. A tunnel three miles long, chiefly through loess, would be required to connect the valleys of the King-ho and that in which Lungto-hsien lies.

From Wating-hsien the road bifurcates, one branch leading westwards to Lanchow-fu and the other northwards via Kuyuan, and the easiest route for a line would be via Kuyuan. Four miles out of Wating-hsien the Liupan Pass is neared. The range rises to 8,700 feet, and forms the watershed of the tributaries of the Wei and Yellow Rivers.

From Khogapu the country to Hweining is hilly, with narrow shallow valleys and streams running in deep valleys. About Sikongyi it is composed of a number of treeless, flat valleys from one-half to one mile broad, with treeless loess hills rising steeply to 1,000 or 1,500 feet over the valleys, and connecting with each other by smaller or narrower valleys or ravines. Streams of no size, and brackish, flow in deep cut beds with perpendicular sides, into which open numerous smaller ravines cutting up the valleys and making movements, except under the border hills, difficult.

Anting-fu, the junction of three valleys, is one of the granaries of Lanchow-fu. Broad valleys like this are rare. They are reached by crossing hills, separated by narrow and intersected ravines. From the ridges one sees nothing but waves of hills, rising one over the other, beyond the immediate valleys below.

The whole road is well provided with coal. Kansu rivals Shansi in the richness and extent of its coal fields. No department of the province north of Tsingling-shan appears to be deficient of coal, and in some of them a superabundance of it is said to exist. Coal, in fact, extends over thirty degrees of longtitude.

As regards natural facilities and the supply at both ends of the line of populous productive and large commercial countries the only line that can come into consideration through this section of China is the one being discussed.

There is scarcely an instance on record where so many valuable and essential conditions co-operate to concentrate all future intercourse on so long a line upon one single channel.

A reconnaissance from Sian-fu to Lanchow-fu was made for the Construction Company by Mr. Orphanides, who started out in December of 1912 and returned in March of this year.

Mr. Orphanides traversed both the North and South roads, and while he finds no insuperable difficulties, on either route is of the opinion that it may be found advisable to cross from one to the other in order to take advantage of easier conditions.

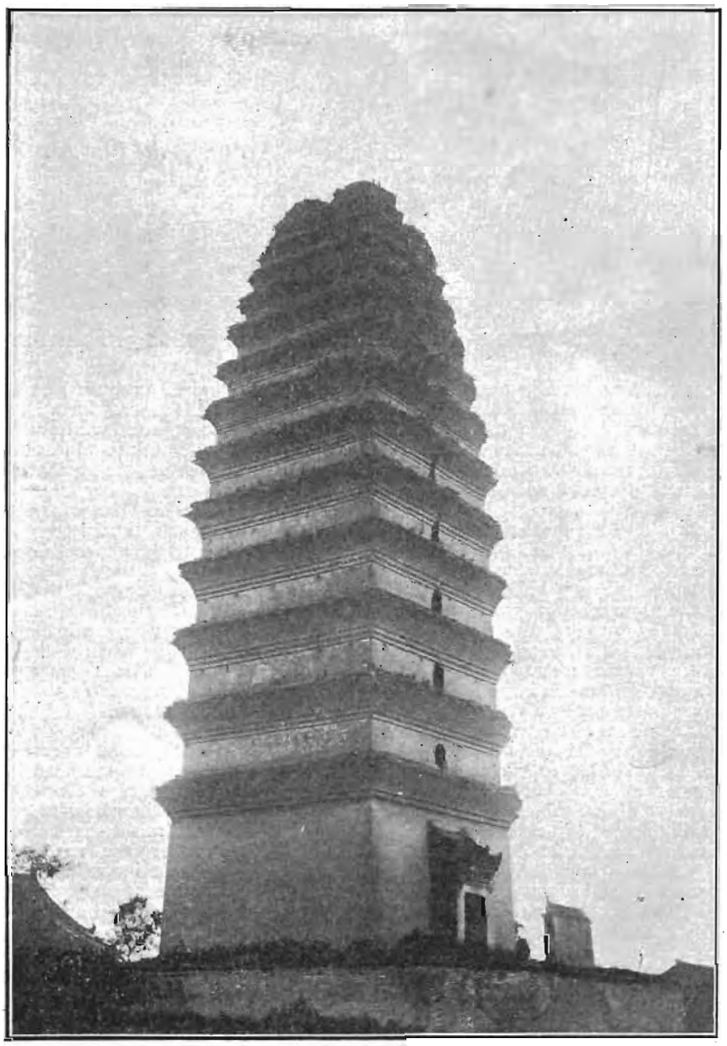
Whatever route is decided upon will, he says, entail heavy engineering work in parts.

The actual cart track on either road could not be followed. At times it mounts the crest of ranges of mountains, anon it descends into valleys, and again climbs to the plateaux, sometimes for long stretches being one series of steep ascents and descents.

If the direction of the North Road is taken a defile of the King-ho might be followed for nearly 45 miles, whilst another defile for nine miles exists between Kuyuan and Tsingning-chow.

Four mountain passes would have to be crossed, between Tsining and Lanchow, the ridges being some 700 to 800 feet above the river beds which in turn are some four to seven thousand feet above sea level.

Except for part of the route along the Yellow River near Lanchow, and the defile of the King-ho, practically all the country is loess formation,



HSIAO YIAN TOWER, SIAN-FU

PALACE, SIAN-FU

Whereas the line will be comparatively easy of construction to Pingliang-fu the negotiation of the passes will require heavy gradients, in many cases from 15 to 25 per 1,000. On the Liupan and other passes between Wating and Tsingning-chow the grades would be particularly heavy. There would have to be some 620 tunnels varying in length from 300 to 2,000 feet, on the line from Sian to Lanchow.

There would also be many high bridges, but the spans would not be long, except in the case of the crossing of the Wei river, near Sian-fu. This bridge would have an opening of one-third of a mile.

Mr. Orphanides returned from Lanchow by the South road, and found that while carts could be used as far as Tsinchow-kan, it was only fit for mules thereafter. Mr. Orphanides branched off the road and followed the Wei river, as the most natural route, as far as Paoki. From Tsinchow-kan to Paoki the river is practically a continuous defile. Villages nestle in the larger valleys, but they are separated by ridges and gorges, the inhabitants being compelled to use narrow roads over the ranges or along the river where it is possible to have them. These roads are sinuous and undulating, and at times extremely dangerous. Having been told of the difficulties of the roads the party sent most of their baggage round by the ordinary route, taking with them just sufficient to carry them to Fengsiang-fu. After two days' experience they were, however, compelled to send the mules back, so dangerous were the roads; and the remainder of the journey had to be done on foot.

If the railway should be brought along this route it would frequently have to cross the stream on account of the sharp bends, though none o the 5bridges would be more than from 400 to 600 feet in width.

The mountains are, in places, loess, with rock; in other places they are entirely of rock, with the rocky sections increasing towards the east. The north of the river is more frequently loess than the south. The sides of the hills sloping to the river present no particular difficulties; there would, however, be heavy work in the shape of cuttings and tunnels, though the latter would be short, and through rock.

In many parts the hills are covered with firs and shrubs, and towards the north-west there are forests which may supply sleepers for the line.

The region would provide all the building material necessary in the shape of sand, stone, gravel, lime and wood.

The cost of building a line by either the north or south route would be about the same. The north has less difficulties but more gradients, whilst the south route has more difficulties and less gradients.

It is possible that the route would utilise both roads passing from one to the other from Kungchang to Anting, thus avoiding the Liupan Pass, or if the North road is used by striking northwards to Kuyuan and thence west and south to Tsingning-chow.

With good roads it at present takes about a month to travel from Sian-fu to Lanchow-fu, but rainy seasons render the roads almost impassable, and extend the time of the journey to two or three months.

A great deal of traffic passes over the route, but breakable articles are difficult to transport. At present a one-ton mile costs about 30 cents between Sian-fu and Lanchow-fu, but with the railway this would be reduced to three cents, and a goods traffic now impossible would be quickly developed.

The Central Section

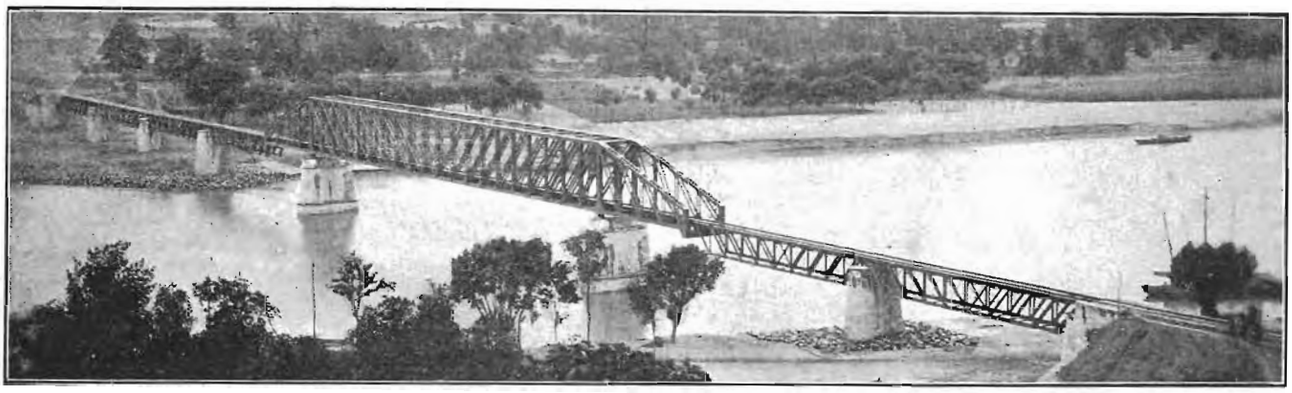
The section of the railway which will traverse the Honan and Kiangsu provinces will be the easiest to build. The Company will be able to take advantage of the line which already exists in Honan province between Kaifeng on the east of the Peking-Hankow Railway and Honan-fu on the west.

The line, which is known as the Pien-lo railway, is 115 miles long, and was built with loan money raised by the Syndicate which is responsible for the flotation of the loan for the main line.

To the west of Honan-fu is the Lo-tung Railway, and if satisfactory arrangements are made with the Chinese Company who are building this line, that will also be used as a part of the main trunk line. Already over 30 miles of the railway have been laid and 70 miles of earthwork have been completed. It was designed to connect Honan-fu with Tungkwan, and traffic is now opened to Tiehmen.

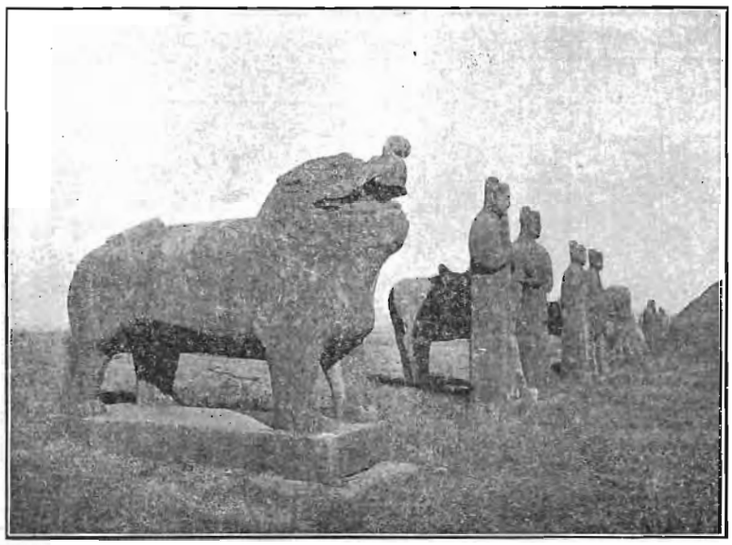
This line is distinctly commercial, and is owned by the gentry of Honan. Efforts have recently been made to acquire the railway for the Government, and 200 shareholders met early in April and discussed the question for three days before coming to a decision. The majority of the meeting favored nationalization of the line, and unless unforeseen circumstances arise, an agreement will shortly be come to with the Government. If the owners of this line object to nationalization, then a separate line will have to be built from Honan-fu.

On the east side of Kaifeng-fu, the line will run south-eastwards, in the vicinity of the old



THE LUNG-TSING-U-HAI RAILWAY.—STEEL BRIDGE 316 METRES LONG OVER THE LOHO, OPENED TO TRAFFIC ON DECEMBER 28, 1910

HSIANG KUE ABBEY, KAIFENG-FU



SUNG TOMBS, KAIFENG-FU

course of the Yellow River, and will cross the Tientsin-Pukow Railway at Suchow-fu. From Suchow-fu, it will continue south-eastwards to Tsingkiang-pu, on the Grand Canal. At Tsingkiang-pu, another short section, named the Tsingkiang-pu-Yang-chuang line will probably be taken over. It is about 20 kilometres long.

From Tsingkiang-pu, there is still doubt as to which route the railway will follow. It is shown later that Haichow is impossible as a port, and therefore the line will have to be taken to a port on the Yangtse River. In such a case, it will strike south-eastwards from Tsingkiang-pu to Powning, and follow the old road through Yencheng, Tungtai, Jukao, and to the River.

Search for a Seaport

One of the greatest difficulties which confronts the Construction Company is to find a suitable harbor on the sea coast as a terminal. There are very few places, if any, between Tsing-tao and the Yangtsze River which might be converted into a suitable port for the handling of shipping, and this is particularly what the Chinese desire, and in fact should have. At present the development of Tsing-tao, the best natural harbor on the coast, threatens to wrest from any other place the possibility of prosperity as a port to handle the traffic which is bound in the future to come from the interior of China with the extension of railway communication.

Tsingtao has a very marked advantage over any port to the south, inasmuch as it is one where the largest sea-going vessel might enter and discharge cargo.

In connection with the trunk line Haichow has been talked of as a port, but that portion of the coast is impossible, owing to the shallows caused by the immense amount of silt deposited by the Yellow River. However, to determine the most likely spot Mr. A. J. H. Charignon, Adviser to the Board of Posts and Communications, was despatched to investigate.

The only places that could come within consideration were Lin-hung-kow, at Haichow; Kwan-ho-kow, at Haichow; Tung-yang-kang, at the mouth of the old Yellow River; Hsin-yang-kang, at Yen-tcheng-hsien, and the Haimen Channel.

Much hope was placed in being able to use Haichow as the sea terminus of the line by dredging a harbor, but the survey made under the direction of the Coast Inspector of the Maritime Customs shows that such a scheme is impossible. At ebb tide there is not twelve inches of water at the mouth of the river, whilst between Hsi-lien-tao and Hsu-kow the water does not reach a depth of six feet.

Whilst Haichow would not be suitable for the terminus of a trunk line, it might well be connected by a branch line from Tsingkiang-pu owing to the industry carried on there in connection with the manufacture of salt, oil and flour, etc.

So far as the old Yellow River mouth is concerned moderate sized steamers could not enter at any point. Existing maps are incorrect as showing the old mouth as an estuary, for in reality there is only a distance of from one to two miles between the old dykes. So little depth exists here that even a small steam launch may not navigate the stream.

Hsing-yang-kang is the best available place on this part of the coast, but no matter how good the actual port, there is an immense sand bank outside which would prevent even the smallest steamer entering. Hsing-yang-kang is the centre whence corn, rice, and other grain grown in the districts of Yen-tsecheng and Powning, is exported, and salt from the salt pans in the vicinity is sent inland, but the export is all done by junk. For this reason it may be a port to which a short branch line might profitably be laid.

The Haimen Channel on the Yangtsze remains as the only place where a port might be established, though even that channel is rendered somewhat difficult by virtue of the numerous sand banks which exist. Dredging would have to be undertaken to permit of deep draught vessels entering, but shallow draught boats can already reach the port, and do keep up a regular connection.

At Ta-kang there is a depth of 30 feet, and the location gives protection in case of storm.

Observations show, too, that the Haimen Channel is likely to grow wider and deeper, whilst the Gutzlaff and Wei-shan channels are showing gradual silting.

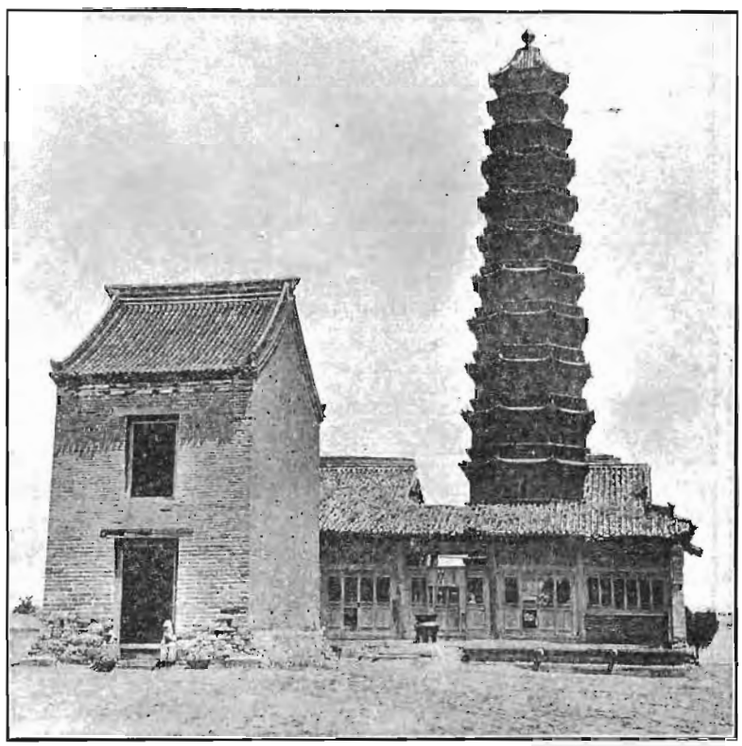
The conclusion of Mr. Charignon is that Ta-kang could be made a suitable terminus, though the opening and management of the port would necessitate large initial expenditure.

The port of Tungchow, known by its native name of Tien-sheng-kang, is already a port of call for Yangtsze steamers, and is about eight miles from the city of Tungchow. It would be of immediate service to the railway in permitting the discharge there of railway material, and after the line is built would be a port for steamers without any particular additional expenditure.

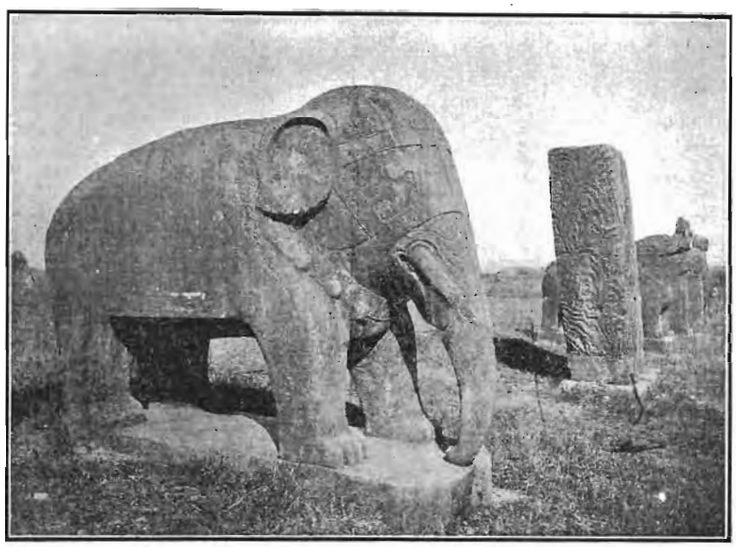
After exhaustively investigating various places, and examining the routes of commerce, the surveyor came to the conclusion that a location of the line from Tsingkiang-pu to the seaport of Kwanho-kow, via Antung-hsien, and the south bank of Ta-tchao-ho, would be by far the most advantageous. Unfortunately the construction of this line would depend upon the improvement of Ta-tchao-ho, and unless the people of Haichow took immediate and comprehensive action, the construction of this line would be impossible.

The location from Tsingkiang-pu to the Yangtsze River via Powning, Yencheng, Tungtai, Haian, Jukao and Nan-tung-chow to the small but extremely useful harbor of Tien-shen-kang would be a good one if Haimen (Ta Kang) proved to be a good anchorage, with a south channel of easy entrance. During the period of construction, it would not, however, serve any useful purpose. If Haimen proved to be of no value as a terminus, then the trunk railway would have the harbor of Tien-shen-kang at

(*Continued on page 474*)



IRON TOWER ABBEY, KAIFENG-FU

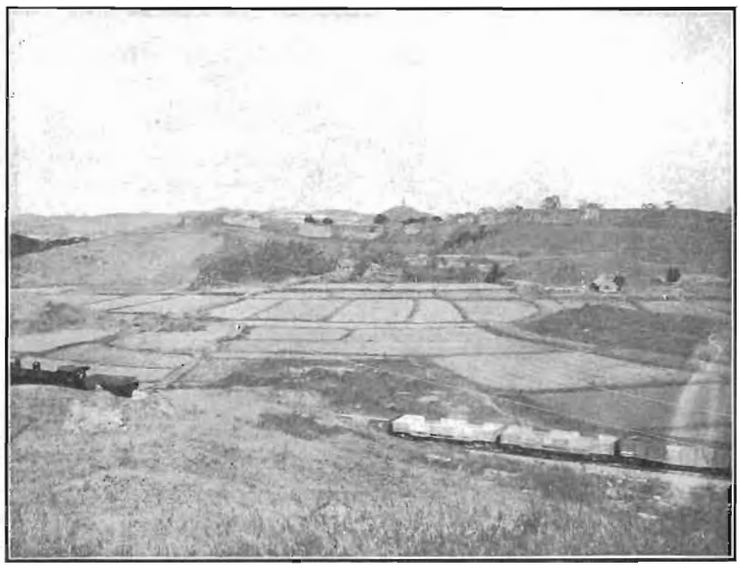


SUNG TOMBS, KAIFENG-FU

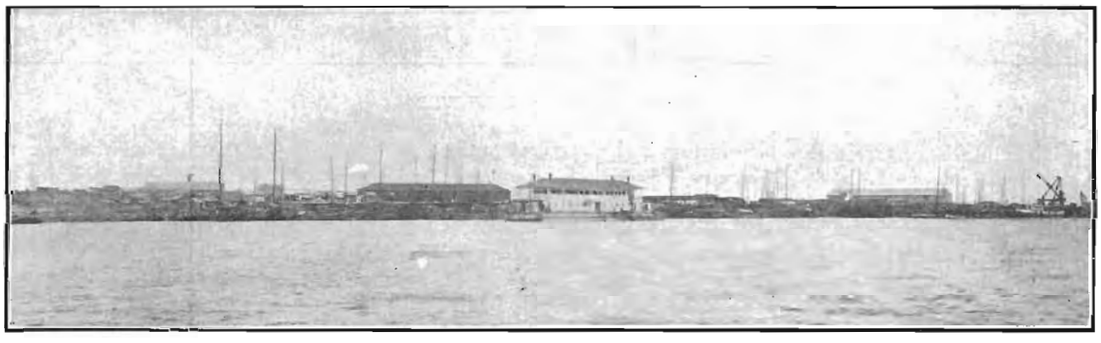
DEVELOPING PUKOW

In a very short time, steps will have to be taken to make the terminus of the railway at Pukow, on the Yangtsze River, possible as a residential and business centre. The site of the station is at a spot where land is invariably covered by water. Reclamation on a large scale had to be undertaken for railway necessities, and work on a much larger scale will have to be arranged for if Pukow is to become a port of any consequence. In view of possibilities of development most of the land in the vicinity has been purchased by Chinese, and we understand that some steps have already been taken to plan a settlement. It is reported that the local Commissioner at Pukow, Chuang Yun-kuan, was on a visit to Tsingtau recently, and was very much struck by the German arrangement of the port, and forthwith engaged a German Engineer to consider the establishment of a settlement at Pukow. The Engineer is reported to have made an estimate for the work, which will involve an expenditure from twelve to fifteen million dollars. We understand that the Commissioner's idea is to have an extensive wharfage and make the settlement some distance from where the Station now stands. This would be an extremely foolish procedure in view of the fact that the railway is the *raison d'etre* of a settlement and of a port at Pukow. The Chinese are notorious for the extraordinary ideas they have in connection with railway location, but if they pursue the idea that is alleged to have taken some shape, they will not only be entering upon a costly step, but one which will in time prove to be productive of constant irritation to the community. The obvious course of procedure would be to set about the development of the settlement in the immediate vicinity of the Railway station. A great amount of reclamation will have to be done, but it could be accomplished cheaply no doubt by using sand dredgers. A systematic programme of extensive reclamation, the cost of which could be participated in by all land-owners benefitting by it, would render the work cheap, uniform, and efficient. Something of this sort will have to be done if Pukow is to progress as its importance warrants.

Already a petition signed by some 1,860 persons has gone to the Kiangpu Branch Chamber of Commerce urging the removal of the south station from Kin T'ang-men, the local name of the spot where it is situated, to Ma-Ying. The local Chamber of Commerce in pursuance of the desire of the petitioners, surveyed the proposed new site and found it satisfactory. They therefore have joined in the movement and have sent a despatch to the Department of Communications urging the change of stations. The Railway authorities selected Pukow as a site for the Southern Terminus after much deliberation. They selected it for its accessibility to Nanking, and for its wharfage possibilities. The advantages gained in these respects outweighed the fact that the site was a low one and would have to be reclaimed. Even after the selection of the site great trouble was experienced in purchasing the land. It is strange that those who are now endeavoring to change the site have kept quiet until so great a sum has been spent in building wharves and in preparing the site for the line, the station, and other buildings. It is suggested that those who head the petition in this matter are men who own land in the locality where they desire the railway station should be.



VIEW ON THE RAILWAY NEAR PUKOW



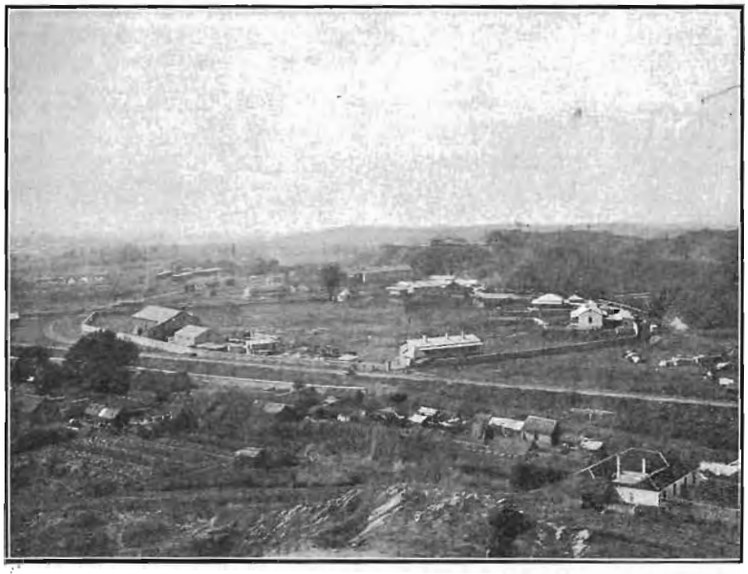
A VIEW OF PUKOW

Pukow belongs to the district of Kiang-pu, and, in the past, was usually regarded as a negligible spot in the district, whilst Pu-tsen, the sister town, a little to the north, was considered to be of greater importance. Nobody dreamed that Pukow, with its low and swampy banks, often liable to be washed over during the high-water season, and not possessing even the semblance of a market, would ever rise to any degree of prosperity.

Pu-tsen is an old Hsien city, built in the fourth year of Emperor Hung Wu, of the Ming dynasty (about 400 years ago). The circumference of the city walls is 14 *li*, or a little under five miles. As can be imagined, this city, situated in an impoverished district, and without possessing in any notable degree facility of communication with the interior, has been up to the present more than ordinarily sluggish. Whether new life will be infused into it by the railway, or whether the possibilities of development at Pukow will deter advancement cannot be said at this moment, though its close proximity to the terminal station should be of advantage to it.

Four post-roads were laid out in former times to connect Pu-tsen with other towns. What is known as the south road runs parallel with the Yangtsze River. The north road passes Tungko, and goes on to Chuchow. The east road runs to Luho. The west road winds around the hills, and passes the Han-shan hills to the Hochow district. The Chinese papers report that with the opening of the port it is planned to construct either a macadamized road or a tramcar line along this West Road.

The main canal of Pukow is called the Sz-Ch'uan-ho, or the Canal of the Four Springs. It flows into the Yangtsze at the south, and connects with Cha-ho-chi in the north. The branch canals are three in number, one of which goes to Chuantsiao; one to Chuchow and Lai-an; and the third to Luho, flowing into the Lian-ho. There are famous springs around Pu-tsen, viz., The Pearl Spring, (Chen-Chu-Chuan); the Blue Spring, (Pih-Chuan); the Tiger Spring, (Hu-



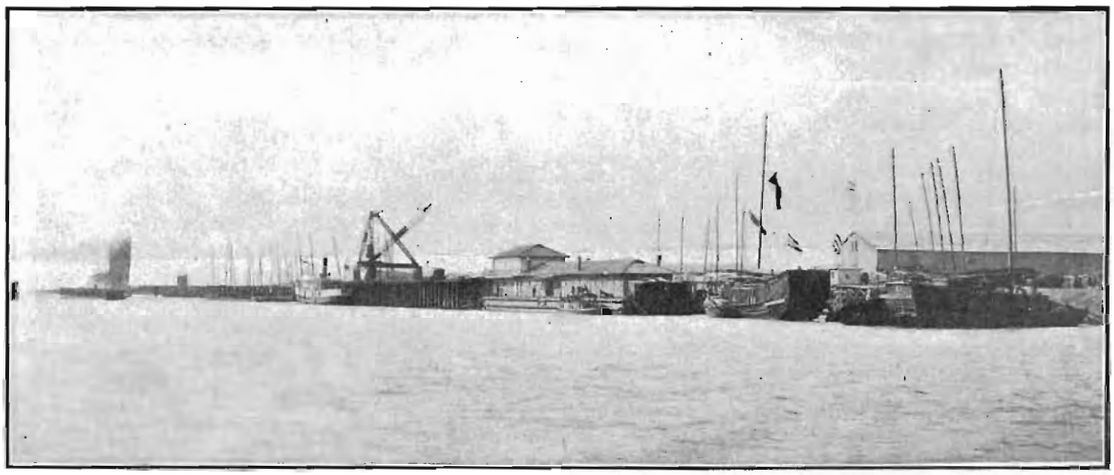
VIEW ON THE RAILWAY NEAR PUKOW

Pao-Chuan); and the Lofty Spring, (Choh Hsi-Chuan). These four Springs, during the dry season, are of great service to the farmers as sources of water-supply for the rice fields.

The most recent census shows that the population of Pukow and Pu-tsen combined is 250,000, and by far the greater part of them are mechanics coolies, and small farmers. Dealers and storekeepers only constitute one per cent. of the whole number.

To the west of Pukow there is a range of hills which goes by the name of T'ang-Chuan, where, it is stated, there exists an excellent coal field. It is reported that there are rich layers of anthracite coal under the hills, and it has been estimated that if the mine is properly worked its output would be quite sufficient to supply the whole Tientsin-Pukow line. On the north side of the hills there are groves of bamboo and trees. Many kinds of medicinal plants are found. The main cereals are rice and beans. Bamboo shoots, cabbages, water chestnuts, lotus seeds, fish, shrimps, crabs, etc., are also produced.

On the hill called Pu-ts-shan is the famous Han-tai Citadel, which used to be considered an important place in warfare. It is called Han-Tai, because it was built by General Han-Shih-chung of the Sung dynasty, who seized this hill and obtained an overwhelming victory over the K'in tribes hailing from the west.



PUKOW FROM THE RIVER

WAKAMATSU IRON FOUNDRY

General Nakamura, Director of the Imperial Japanese Iron Foundry, gave the following explanation before the Budget Committee in the Lower House (third section), of the Wakamatsu Iron Foundry:—

Since the establishment of the Imperial Iron Foundry the authorities have been concentrating their energies upon the completion of the machinery and plant and the training of the operatives. During the past three years the machinery and plant have been brought to a state of perfection, and the operatives have made great progress in skill. These are the principal factors responsible for the increase shown in the profits made by the foundry.

The manufacture of by-products, the revision of the Customs tariff, and the rise in the price of steel and iron in Europe and America are also factors in the increased profit.

During the fiscal year 1909-10, the machinery and plant were not complete, and the operatives were deficient in skill, with the result that the working of the foundry for the year resulted in a loss of over Y.800,000. In the following year these defects were remedied and a profit—amounting to over Y.50,000—was seen for the first time.

The profit increased to over Y.1,500,000 for the year 1911-12. The profit for the present fiscal year (1912-13) still remains unascertained, as the accounts are not yet settled, but the figures are estimated at over Y.2,000,000 based on a rough comparison with the preceding year.

The production of iron and steel has increased—the figures for the year 1909-10 were 100,000 tons, which increased to 160,000 tons for the year 1910-11 and 180,000 tons for the year 1911-12.

The increase in profit is attributable to the completion of the plant and the increased skill of the operatives. For instance, in manufacturing rifle barrels heavy expense was incurred in studying the process between 1904 and 1908, and it was only in 1908 that the foundry succeeded in making barrels of the desired quality. But the progress made in the manufacture of arms proved that the quality of metal formerly deemed fit for rifle barrels was not now suitable for the purpose, and further study had to be made before the ideal quality could be turned out in 1911.

The production of by-products such as pitch, sulphate of ammonia, gas, and the dregs of steel in the smelting furnace, is also partly responsible for the profit; protection and the high prices consequent upon activity in the shipbuilding industry are also contributory causes.

The increase in the price of iron in Europe and America has had a much greater effect on prices than the revision of the Customs tariff, the benefit of which, of course, cannot be ignored.

The difference in the amount of the proceeds from the sales of iron and steel for the three months—April, May and June—in 1911, preceding the revision of the Customs tariff, and the result of the sales for the three months—July, August and September—following the revision of the tariff, was not more than Y.270,000.

It will, no doubt, be difficult, if not impossible, to maintain constantly the present high price of iron. The time is not arrived to ascertain definitely the result of the working of the present fiscal year, but judging from the results up to the end of March the authorities of the iron foundry expect that 190,000 tons of iron and steel can be produced, and that a profit of about Y.3,000,000 can be obtained for the year.

FUNERAL OF THE DOWAGER EMPRESS.—THE CATAFALQUE ENTERING THE PEKING RAILWAY STATION GATES FOR ENTRAINMENT TO THE WESTERN TOMBS. *Specially taken for the Far Eastern Review.*

THE FAR EASTERN REVIEW

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RUSKIN AND THE TSIN-PU RAILWAY

The difference of opinion that has developed in connection with the respective merits of the railway stations on the Northern Section and the Southern Section of the Tientsin-Pukow Railway shows little sign of settlement. Considerable interest in the question has been manifested in many quarters since the publication in the FAR EASTERN REVIEW of January of an historical and descriptive article on the Tientsin-Pukow Railway, and in our last issue of further statements of an official character. A correspondent writes to us to point out that Ruskin has expressed decided views on the general subject, and encloses the following extract from the "Seven Lamps of Architecture:"—

> Another of the strange and evil tendencies of the present day is to the decoration of the railroad station. Now, if there be any place in the world in which people are deprived of that portion of temper and discretion which is necessary to the contemplation of beauty, it is there. It is the very temple of discomfort, and the only charity that the builder can extend to us is to show us, plainly as may be, how soonest to escape from it. The whole system of railroad travelling is addressed to people, who, being in a hurry, are therefore, for the time being, miserable. No one would travel in that manner who could help it—who had time to go leisurely over hills and between hedges, instead of through tunnels and between banks: at least those who would, have no sense of beauty so acute as that we need consult it at the station. The railroad is in all its relations a matter of earnest business, to be got through as soon as possible. It transmutes a man from a traveller into a living parcel. For the time he has parted with the nobler characteristics of his humanity for the sake of a planetary power of locomotion. Do not ask him to admire anything: You might as well ask the wind. Carry him safely, dismiss him soon: he will thank you for nothing else. All attempts to please him in any other way are mere mockery, and insults to the things by which you endeavour to do so. There never was more flagrant nor impertinent folly than the smallest portion of ornament in anything concerned with railroads or near them. Keep them out of the way, take them through the ugliest country you can find, confess them the miserable things they are, and spend nothing upon them but for safety and speed. Give large salaries to efficient servants, large prices to good manufacturers, large wages to able workmen; let the iron be tough, and the brickwork solid, and the carriages strong. The time is perhaps not distant when these first necessities may not be easily met; and to increase expense in any other direction is madness. Better bury gold in the embankments than put it in ornaments on the stations. Will a single traveller be willing to pay an increased fare on the South-Western, because the columns of the terminus are covered with patterns from Nineveh?—he will only care less for the Ninevite ivories in the British Museum: or on the North-Western, because there are old English looking spandrels to the roof of the station at Crewe?—he will only have less pleasure in their prototypes at Crewe House. Railroad architecture has, or would have, a dignity of its own if it were only left to its work.

We doubt whether this dictum will be accepted as conclusive. It is to be noted that in connection with the new Grand Central Terminal at New York, a writer in the *Scientific American* says that the "motive of its façade is an attempt to offer a tribute to the glory of commerce" (as exemplified in the Grand Central Terminal.) Two eminent firms of architects collaborated in the work of erecting the Terminal; the general æsthetic treatment of the subject being left to one, while the other was entrusted with the "engineer-architect" features. It may, of course, be claimed with justice that there is a very considerable difference between a Terminal in the second largest city of the world and the stations scattered along a railway line in the interior of China. From our point of view it is better that beauty and utility should always be combined, but it is obvious that if it be impossible to secure both, beauty must give way to utility.

CHINA'S RAILWAY RECEIPTS

The statement comparing receipts of various Government railways in China for the past four years, which is published below, affords striking evidence of the extraordinary movement which trade exhibited despite the disturbances caused by the Revolution. Judging from the pessimistic reports which had been circulated there was every reason to believe that trade returns would either disclose stagnation or a backward tendency. The railway receipts, which in most countries may be regarded as a barometer of commerce, show, on the contrary, that not only did the Revolution not financially depress traffic, but that the earnings were increased. Every road except the Chuchow-Pingsiang Railway, chronicled an increase over the average of the three previous years, and the total net increase for the whole system is over $6,500,000.

A comparison of the returns for the years 1909, 1910, and 1911 is interesting. The year 1910 shows a fair increase over 1909, whilst the year 1911 shows a decrease on some of the lines. When it is remembered that traffic on some of the railroads was absolutely suspended for months during the Revolution, this indicates that general business showed not a fluctuation, but what can be described as a steady increase. Such a thing may be due to abnormal conditions favoring railway transportation, but, in the absence of specific statistical returns, it is difficult to make an analysis which will clearly indicate what were the actual causes of the rise. On the Peking-Mukden and the Shanghai-Nanking Railways there was an abnormal movement of people fleeing from various cities along the routes, but any extraordinary increase in that direction would be counteracted by the losses caused by the suspension of traffic on other lines. In fact, on the Peking-Hankow line, no passengers were carried

for some months, whilst regular passenger traffic was interrupted on the Shanghai-Nanking line for some time. Soldiers even yet crowd into trains and refuse to pay their fares, thus obstructing the regular flow of traffic, passengers being afraid to travel for fear of molestation. On some sections of the Peking-Hankow Railway, where up to $3,000 per day was taken, the line is now receiving $300 per day. This at a time of comparative peace. In fact, the loss in this direction conjoined with the dislocation of commercial traffic in some sections during the Revolution, far more than counterbalances any gain made by the receipts due to the extraordinary migration of refugees in the Revolution period.

If a fair allowance is made both for the loss on account of the disturbances, and the gain made through the abnormal movement of people, there should be an equalization, but the returns indicate that the railways increased their business. That increase, of course, may be accounted for in different ways. It may mean that there were good seasons and good general business. Taking all in all, and making a fair deduction, it is safe to say that the returns prove that the economic fabric of the country was not so badly affected by the Revolution as has been declared by many publicists. Happily the country has not suffered as it might have done. The man on the land, it is demonstrated, continued in his business of production, and, except in very limited areas, he was not affected by the conflict of troops which marked the latter part of 1911 and the political storm which prevailed during 1912. Even where the fighting was most severe, recuperation has shown itself in a remarkable way. At Hankow the burned section has almost been reconstructed, not in the manner planned by those who saw in their mind's eye a modern city arising from the ashes of the destroyed hovels, but much on the old lines. The people who had business to do, and who found that there was business to be done, could not wait for the leisurely æsthetics to plan the rebuilding of the desolated area. They went ahead and erected whatever shelter they could contrive in order to enable them to continue the commerce upon which their existence depended.

Although inland cities on the railway were affected by the Revolution, a large movement of cargo took place through them, the railways carrying goods there to be sent into the country to where the population had fled. The real economic loss to China as a result of the Revolution has been almost nil. Some individuals have suffered severely, but in general the country shows greater business than ever in her commercial history. Had the Revolution militated against prosperous continuance of commerce and trade, as has been alleged, there would have been stagnation, if not a tremendous decrease. But a state of things startlingly to the contrary has been shown. Not only have the railways shown substantial increase in earnings, but for 1912 the Maritime Customs—which may be regarded as the pulse of the country in so far as foreign trade is concerned—produced record returns over the previous year, which in themselves proved a record over preceding years.

Another table which we publish below gives a statement comparing the actual receipts with the receipts estimated for the Budget by the Minister of Communications. The estimates were based on the averages and probabilities of former years and the returns therefore exhibit conclusively enough that the increase in the operations of 1912 was a genuine rather than a nominal one.

STATEMENT COMPARING THE RECEIPTS OF THE RAILWAYS UNDER THE DIRECT CONTROL OF THE DEPARTMENT OF COMMUNICATIONS FOR THE YEAR 1912 WITH OTHER YEARS

NAME	1909	1910	1911	AVERAGE 3 YEARS	1912	INCREASE	DECREASE
Peking-Mukden . .	$11,804,638	$ 1,316,164	$12,121,391	$11,747,398	$13,000,000	$1,252,602	
Peking-Hankow . .	11,114,614	12,242,858	11,398,460	11,585,311	13,114,302	1,529,591	
Chenting-Taiyuan . .	1,449,806	1,756,403	1,661,975	1,622,758	2,480,000	857,242	
Taokow-Tsinghwa . .	356,517	477,593	466,558	433,556	540,000	106,444	
Kaifeng-Honan . . .	390,030	555,302	614,846	520,226	795,000	274,774	
Shanghai-Nanking . .	1,796,083	2,018,349	2,251,072	2,021,835	2,660,000	638,165	
Chuchow-Pingsiang (Hunan)	606,148	688,216	425,511	573,292	237,000		$336,292
Peking-Kalgan	476,442	1,329,632	1,486,241	1,097,438	2,412,000	1,314,562	
Canton-Kowloon . . .			231,268		597,800	366,532	
Kirin-Changchun . . .			21,450		213,000	191,550	
Chang-sui Extension (Kalgan line) . .			89,034		401,000	320,966	
					Total	$6,852,428	$336,292
					Net Increase	6,516,136	

STATEMENT COMPARING ACTUAL RECEIPTS WITH BUDGET ESTIMATE OF THE RAILWAYS UNDER DIRECT CONTROL OF THE DEPARTMENT OF COMMUNICATIONS FOR THE FIRST YEAR OF THE REPUBLIC (1912)

NAME	ACTUAL RECEIPTS (1912)	ESTIMATED RECEIPTS AS SHOWN IN BUDGET	INCREASE	DECREASE
Peking-Mukden	$13,000,000	$10,635,150	$2,364,850	
Peking-Hankow	13,114,302	13,051,500	62,802	
Chenting-Taiyuan	2,480,000	1,800,000	680,000	
Taokow-Tsinghwa	540,000	631,621		91,621
Kaifeng-Honanfu	795,000	630,000	165,000	
Shanghai-Nanking	2,660,000	2,347,650	312,350	
Chuchow-Pingsiang (Hunan)	237,000	612,811		375,811
Kirin-Changchun	213,000	15,000	198,000	
Peking-Kalgan	2,412,000	1,452,000	960,000	
Canton-Kowloon	597,800	870,000		272,200
Chang-sui Extension (Kalgan)	401,000			
	Total		$4,743,002	$739,632
	Net Increase		$4,003,370	

CHINA'S FOREIGN TRADE

The Revolution has caused a change in practically everything appertaining to the national life of China, and it was inevitable that there should be symptoms of some alteration in trade relations between Chinese and foreigners. Certain Chinese have expressed the hope that the foreign middleman will be done away with, and that business in the future will be conducted directly between Chinese merchants in China and foreign concerns in America and Europe. The present system, whereby the Chinese have to deal with agents at the treaty ports, is, they say, burdensome and expensive. This is a plausible argument, but it may be shown without difficulty that the existing system is the best in the circumstances which prevail to-day, and will continue to be the best for many years to come.

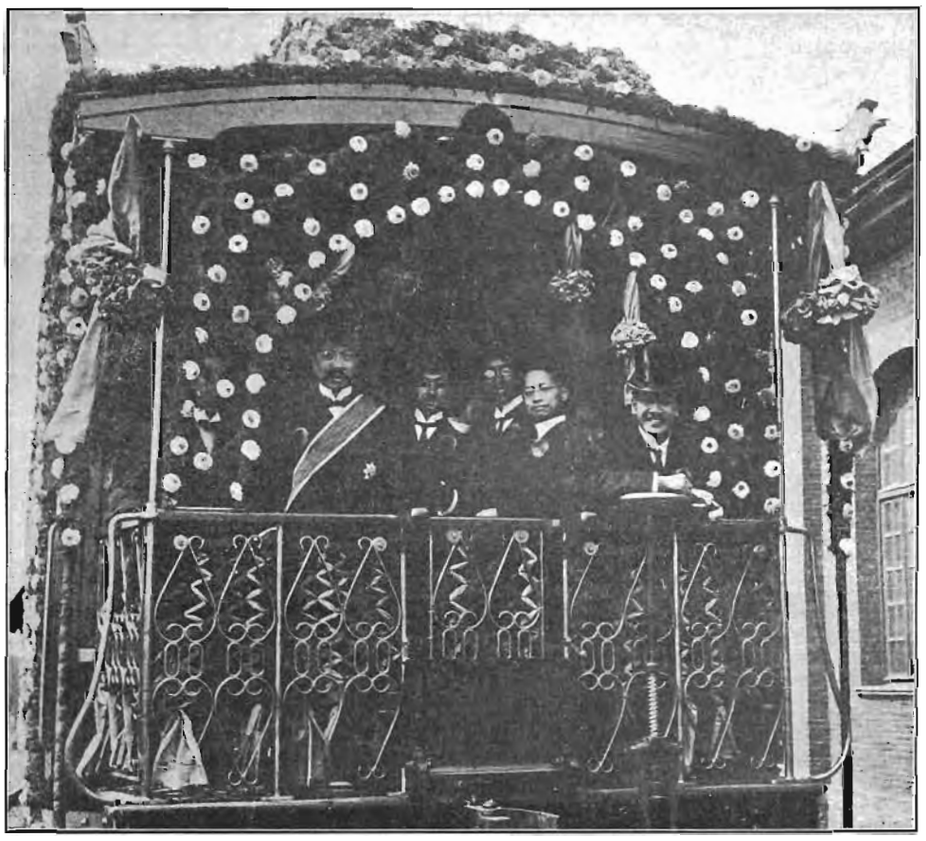
There are extremely few Chinese in mercantile life who could efficiently perform the correspondence work which would be entailed in direct trade. It is obvious that a small misunderstanding in regard to a business deal of any magnitude might result in great friction and loss. Moreover, there is the question of credit to be considered. Large American or European firms engaged in the export trade know from experience that their foreign agents at the treaty ports are stable, and they fill their orders with confidence and without demur. The situation would, however, be quite different were Chinese firms to endeavour to do business direct. It would take time to establish the mutual confidence on which so much depends in modern business affairs. Moreover the foreign agent at the treaty port is equipped with a knowledge of both foreign and Chinese conditions, and it has been essential that he should keep in the closest touch with exchange.

Considered from a broad standpoint, the foreign agent in China is found to be a help rather than a hindrance to China's trade. He has personal knowledge of what the Chinese want and he is better able to communicate his knowledge to his principals than could the Chinese. Possibly in the future there will be a development in the direction of closer association between the Chinese and the foreigner in China, and this will be welcomed. But we venture to assert that the time has not yet come for the Chinese to seek to dispense with the services of the foreign firms in the treaty ports, which have done such notable work in extending the sphere of China's foreign trade.

revolutionary ranks and quickly proved himself to be one of the ablest and most out-spoken members of his party. He was made Vice-Minister of Foreign Affairs at the outset, and later assistant Peace Commissioner to Dr. Wu Ting-fang. To the activities of Mr. Wen is due much of the success of the revolutionary party in check-mating the Manchus in their efforts to raise loans for the campaign, and his force of character in other directions had a determining influence upon the happenings of the time. As assistant Peace Commissioner his personality was dominant in the negotiations, and it is questionable if events would have shaped as they did do had it not been for his inflexible courage in and out of the peace conferences. Ultimately he was appointed Commissioner of Trade and Foreign Affairs at Shanghai, and head of the Prize Court.

Resigning as Commissioner for Foreign Affairs in March, 1912, Mr. Wen devoted himself to the reformation of the China Merchants' Company. As a director he exerted an influence which stirred the old organisation to the bottom and caused such a pother in the ranks of the corruptionists that he had to make a vigorous and sustained fight to gain a victory over them. How he resisted the forceful endeavours of the employees to secure an unwarranted bonus was told in a recent issue of the FAR EASTERN REVIEW, and that episode alone showed him to be a man of unusual strength of character.

Mr. Wen was born in 1867, so is now in the prime of life. He is the author of "English Grammar Simplified," designed to assist the Chinese student to a rapid acquirement of a knowledge of the application of the rules governing English speech and literature, and has another book on English composition on the stocks.



FUNERAL OF THE EMPRESS DOWAGER.—THE FUNERAL CAR.
READING FROM LEFT TO RIGHT:—
MR. CHU CHI-CHIEN (MINISTER OF POSTS AND COMMUNICATIONS)
MR. TSENG KUANG-HSIANG (INSPECTOR-GENERAL OF RAILWAYS.)
MR. KWANG (DIRECTOR OF THE PEKING-HANKOW RAILWAY)
MR. YI KUNG-CHO (DIRECTOR-GENERAL OF RAILWAYS.)
MR. KUAN MIEN CHUN (DIRECTOR OF THE PEKING-KALGAN RAILWAY)
Specially taken for the Far Eastern Review.

UNIFYING RAILWAY ACCOUNTS

The article by Dr. C. C. Wang on "The Necessity for Unification of Railway Accounts in China," which we publish elsewhere, is a timely proof of the new spirit animating thoughtful Chinese. The disappointment of over-extravagant hopes on the part of some foreigners, who expected China to make greater progress in one year than any nation could be fairly expected to make in ten, has caused a backswing of the pendulum of enthusiasm and there is an increasing disposition in some quarters to brand New China as an abject failure. The thoughtful and valuable article by Dr. Wang comes as a reminder that there are Chinese gentlemen and scholars who are avoiding the political limelight and giving much-needed attention to problems of administration, the solution of which will tend indirectly to render the political atmosphere clearer. Again and again has it been pointed out that the art of public accountancy is almost unknown in China, and readers of Mr. H. B. Morse's excellent book "The Trade and Administration of the Chinese Empire" will recall that he showed that what accounts were kept as between the Central and Provincial Governments appeared to be designed rather to obscure than to illuminate the financial position. That a realization of the importance of a uniform system of accountancy in connection with railways is developing in China must be hailed as a most hopeful sign.

As Dr. Wang suggests, the reform will take time. It will not be easy to persuade those who have devised their own system that it is inferior to a new one. Without attributing venal considerations, a system of keeping accounts that reflects the most favourable light upon those interested in the management of a line, is bound to commend itself to them, and it is to be anticipated that there will be a certain amount of opposition to unification. However, it is so obvious that the system will tend to improvement, ramifying in various directions, that its adoption is certain.

Without wishing to indulge in prophecy, the opinion may be hazarded that the railways of China will soon be her greatest asset. It has been said that if a railway were to start in China from no particular place and to end in a locality as indefinite, it would rapidly develop a lucrative carrying trade. There is more than a germ of truth in this picturesque assertion. China's railways under efficient management are rapidly becoming one of her most promising sources of revenue. When the operations contemplated by the Chinese National Railway Corporation, of which Dr. Sun Yat-sen is Director-General, are begun the importance of the lines as revenue producers will be materially enhanced. In view of this certain development it is highly gratifying to find that such important questions as securing uniformity in railway accounts are being given the attention that they deserve.

MINING IN CHINA

PROGRESSIVE MOVEMENT BY THE MINISTRY OF MINES

It is well known to the world that the mineral deposits in the vast country of China are incredibly rich, while development work has been incredibly poor. Owing to superstitious beliefs mining enterprise was rigidly prohibited during the twenty-four Dynasties preceding that of the Ch'ings, a period extending over four thousand years. Even in the Ch'ing Dynasty, the prohibition was raised only within very recent times, when mining affairs were placed under

the supervision of the Board of Agriculture and Industry. Not till then was anything like a beginning made seriously to develop this enterprise, but even now it is no exaggeration to say that the immense mineral resources of the country have scarcely been touched.

It would be difficult to imagine what enormous wealth China could acquire if she set her mind determinedly to the task of reaping the benefits derivable from a systematic exploitation of her latent mineral resources. That there is a movement afoot we are pleased to chronicle. The Ministry of Industry and Commerce is now giving the matter serious attention. Considerable activity has, in fact, already been displayed to start a great mining propaganda, aiming at developing the resources of the whole country.

Properly to direct this gigantic task, three organizations will soon be formed, namely, the Mining Academy, the Prospecting Corps, and the National Mining Association.

In the past mining education has not been prominently sought after nor encouraged and very few students have specialized in this subject. There is a Geological Department in the Peking University, but since its inauguration, only three students have graduated from it.

To give stimulus to this branch it is proposed to establish a Mining Academy, which is to be attached to the Mining Department of the Ministry of Industry and Commerce. It will take students who have passed the Middle School course, and, after three years' rigid training, in addition to class-room work, they will be sent out to make actual experiments.

The Geology Department of the Peking University will co-operate with this Academy in the training of these students. The Academy will have one President and four professors, two of whom are to be foreigners and two Chinese. The unique feature is that the professors are to teach for half the year and to spend the other half in active prospecting. An abundant collection of books, and mineral specimens have been procured.

At the start, thirty students will be taken, and they are to be divided into two classes, the Mining Class and the Geology Class. Graduates from this Academy are to have conferred upon them the degree of M.E., and will be entitled to join the Prospecting Corps. If the graduate acquits himself well, and renders efficient service for three years in this capacity, he will be appointed a Technical Expert.

The President and four Professors of the Mining Academy are to form the heads of the Prospecting Corps. The object of this Corps is to instruct graduates in actual field work. They are to prospect in the various provinces, make reports and formulate plans for developing mines. Such reports and plans are to be submitted to the Chief of the Mining Department of the Ministry and the Minister for consideration. When the arrangement is working there will always be two professors in the Academy and two professors in the field. Thus the Prospecting Corps will be closely related to the Academy. The Prospectors are to make extensive travels and prospect in important mining districts; in doing this they will familiarise themselves with the geology of their own country and the characteristics of its minerals. It is recognised that the class-room work is not calculated to increase either the professors' knowledge or experience, and mere theorizing without actual demonstration is not likely to make the graduates efficient engineers.

We give below a translation of the pamphlet issued by the Ministry of Industry and Commerce in regard to the

MR. EOUS CHANG, DIRECTOR OF THE MINING DEPARTMENT OF THE BOARD OF INDUSTRY AND COMMERCE

institution of the Mining Academy and the Prospecting Corps.

"At the present juncture China is experiencing acute financial distress. It is a puzzle how this vast country, with almost inexhaustible resources, can be poverty-stricken; yet poverty-stricken it is, at least for the present moment. But we all realize that China will be well-off if she will only take the trouble to convert the minerals underneath the earth into useful materials.

"During the past few years many persons have been urging the importance of opening and developing mines, and not a few capitalists have actually engaged in mining enterprises. Considerable time has now elapsed and much money and energy have been expended, but not much success has attended the endeavours, and we usually ascribe that to the following causes:—lack of adequate capital; difficulties in communications and lack of proper men to manage the work. These causes are indeed enough to obstruct the progress of any enterprise, but let us imagine that all these defects are removed, what else is wanting? Most emphatically there is need of thorough investigation before any development work is attempted. This is more important in our country in view of the scarcity of capital to carry out the work. When we are confronted with the problem of carrying out unlimited enterprises with limited capital, we will have to solve it by devoting the capital to only the most profitable sections. The hardest part is to ascertain which are the most important and profitable, and which are not. The Prospecting Corps will be formed with the solution of this problem in view.

"According to the present status in our country, private capital will not be sufficient to cope with such big issues, and much must be derived from the Government. If the Treasury is not able to meet this expenditure, the Government will have to float foreign loans. But the proceeds from loans will be necessarily limited, and will not be able to meet the demands of every province. The Government cannot refuse money to one province and grant it to another province for mining enterprise unless there is very good ground for doing so. For instance, there are kerosene wells in both Szechuan and Shensi. The Szechuan men will insist on having money granted to Szechuan to develop the wells, and the Shensi men will be sure to claim that the money should be granted to them to develop their wells. Now, since the funds are limited, we must do one thing at a time. We cannot afford to divide the money among them, and therefore there must be some standard by which to judge the province which deserves first attention. The function of the Prospecting Corps will be to review the various degrees of importance of different districts.

"There is another great obstacle in the way of healthful development of mining enterprises. We know only too well the disasters that befell the financial market when ruthless speculation and "bubble" exploitation was attempted in connection with mining enterprises in Australia and other countries. Australia is one of the richest of the gold producing countries, and it is a common saying among Australians that the gold output of Australia in the recent fifty years is enough to be moulded into a Triumph Arch, but the capital that was needed to procure this gold is enough to be melted into two such arches. Now in a country like ours, heartless exploiters will have a splendid chance to reap fortunes by representing the merits of non-existing mines, and the ignorant mass will be easily deceived. It is well to be on guard at the outset to prevent swindling schemes such as those that have shaken

the financial situation of foreign countries in the past, and it is the duty of the Government of keep a strict surveillance and afford protection to the mass of the people. The Prospecting Corps will render great service in this respect for it will endeavour to make accurate reports and reliable estimates of mineral deposits, and, when this is accomplished, any mining swindle may be easily exposed.

"This Prospecting Corps will not stop with simply collecting and studying books and specimens. The Corps will actually go into the mining districts with picks and shovels. They will make surveys, draw maps, and bring back specimens of the minerals they dig up from the ground.

"Now all this is a great undertaking when we bear in mind the vastness of the territory. When we study the records of the European Geological Investigation Bureaux, we find that one man would cover a distance of 6,000 *li*, or 2,000 miles in a year, and he is able to survey in one year about 1,000 *li*. As yet we do not have very accurate maps of our country. We will first take China proper, which is about 15,000,000 square *li*. If the period required to cover the whole country is fixed at 10 years, then it will require 1,500 prospectors, and the minimum salary for this corps will be Tls. 3,000,000, without counting the travelling expenses, cost of apparatus, etc. The European countries make very thorough investigations and surveys, and they are able to draw maps to a very large scale. Therefore they take a long time in accomplishing the work.

"We will proceed with this work in this way. Divide the mining districts of the whole country into three classes. Those districts where there are rich mineral deposits and easy of development will be placed under Class 1. Those districts where there are easy means of communication and offer good advantages, will be called Class 2. Those where communication is difficult and with little value shall be under Class 3. In districts under Class 1, we will make very thorough investigations and draw maps of 1; 20,000. For Class 2 the investigations will be more general, and the maps will be on a scale of 1; 100,000. A brief survey and investigation will be made in districts under Class 3, and the map will be only 1; 250,000. We estimate that there are only one-tenth of the mining districts in this country entitled to belong to Class 1; three-tenths may belong to Class 2, while six-tenths of the whole may come under Class 3. We will fix the period at fifteen years. The first three years will be the trial period, and after the third year, the number of prospectors will be increased, maps will be made, and specimens will be collected. In fifteen years, the general conditions of mining in this country will be fairly established. This work will form the basis of the proper development of the nation's resources, etc."

MR. LIU CHIEN (CHIN YIN RICHARD LIU) B.A., M.E., TECHNICAL EXPERT OF THE MINING BOARD

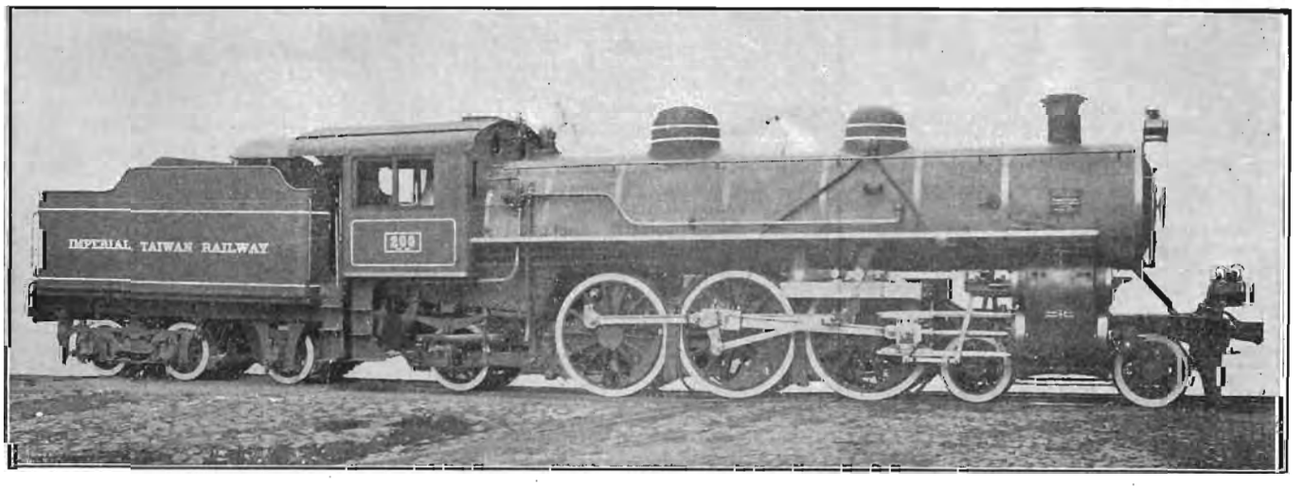
From the above declaration it will be noted that the Government have thoroughly awakened to the importance of developing mining enterprises, and the formation of the Mining Academy and the Prospecting Corps are the first conscientious efforts.

In addition to the Academy and the Corps, there is also being formed a National Mining Association. The members of this Association will be drawn from the proprietors of Mining Companies, those who are engaged in mining work, returned students with the M.E. degree, and capitalists and other parties who are in close connection with mining enterprises.

This Association will promote and encourage the carrying out of mining projects, and it will be the organ of the nation's mining section. It will shape the opinion of the country in mining matters, and act as adviser to the Government. All measures of improvement will be actively discussed. It will also institute a special Bureau of Investigation and Compilation, to investigate mining conditions in this and other countries, and issue monographs on important topics.

A Chemical Analysis Laboratory will be attached to the Association, to undertake all analysis work in connection with mining projects. This Association will also publish a Mining Magazine, and translate or compile practical mining books. Another feature of the Association will be a Recommending Bureau, to recommend capable mining engineers to mining projectors and companies.

With the Association on such a large basis and scope, it should exert great influence upon the rapid development of mining projects. The Academy and the Prospecting Corps will make experiments and discoveries, while the National Mining Association will find means to put the plans into actual shape.



ONE OF THE LOCOMOTIVES RECENTLY SUPPLIED BY THE AMERICAN LOCOMOTIVE COMPANY FOR THE IMPERIAL TAIWAN RAILWAYS. THE DRIVING WHEEL DIAMETER IS 63 INCHES; WEIGHT OF ENGINE 136,500 POUNDS; MAXIMUM TRACTIVE POWER 19,900 POUNDS; BOILER PRESSURE 180 POUNDS

DR. SUN YAT SEN'S RAILWAY SCHEME

On September 9, 1912, President Yuan Shih-kai issued a Mandate authorising Dr. Sun Yat-sen to devise means to plan and construct the future trunk railways of China, and in March that authority was endorsed by the National Council, who unanimously passed a Charter giving certain definite powers. On March 31 that Charter was promulgated by President Yuan Shih-kai, and now is therefore, law.

Whilst Dr. Sun has devoted the bulk of his time since his retirement from the Presidency of the Republic to the development of his ideas in connection with a railway system, nothing conclusive has yet been made public, for the reason that so gigantic a matter cannot be settled offhand in so short a period.

Efforts are being made to persuade certain provincial companies to agree to a nationalisation of the lines in their control, and steps are being taken to draft a national railway law which will define the relation between the provinces and the Government with regard to railway construction and control. When matters of this sort are settled or disposed of it will be possible to launch an extensive scheme of construction, providing of course, that the capital is raised. The people are more anxious than ever now to have railway communication, and more schemes are in the air than have ever yet been broached in the last decade. In time most of these will materialise, and when the political unrest which now prevails is settled a serious forward move in construction work can be expected.

FUNERAL OF THE DOWAGER EMPRESS:—The General in uniform on the extreme left is GENERAL KIANG CHAO-CHUNG:
1.—THE GUARDIAN OF THE EMPEROR, SHIH-HSU. 2.—PRINCE PU LUN. 3.—CHING KUNG, A MEMBER OF THE IMPERIAL HOUSEHOLD. 4.—DIRECTOR KWAN, OF THE PEKING-HANKOW RAILWAY. 5.—DIRECTOR GENERAL OF RAILWAYS, MR. YI KUNG-CHO. 6.—INSPECTOR-GENERAL OF RAILWAYS, MR. TSENG KUANG-HSIANG.
(This photo was taken specially for the Far Eastern Review when the party photographed went to the Kin-han railway station to inspect the funeral car on March 30.)

MANDATE OF THE PROVISIONAL PRESIDENT

The Advisory Council having passed the By Laws of the Chinese National Railway Corporation of the Republic of China, I, The President, in accordance with Statute No. 30 hereby promulgate the same.
Seal of the President.
Date March 31st, 1913.

Countersignatures { Premier Chao Ping-chun. / Minister of Communications, Chu Ch'i-ch'ien.

Charter of the Chinese National Railway Corporation of the Republic of China.

1. The Chinese National Railway Corporation is organised in conformity with the Presidential mandate dated September 9th, 1912. With the exception of finished or unfinished lines under Government management or for which contracts have been signed, or for the building of which provision has been made in preliminary agreements on record, all of which come under the category of lines to be carried out under the direct management of the Ministry of Communications, and lines for which other Companies have secured the franchise from the Government and which should be left in the hands of those Companies, the Chinese National Railway Corporation shall have full powers to undertake to provide for and manage all the trunk lines of China. But when trunk lines are projected the Government must be consulted and its assent thereto obtained.

2. The Chinese National Railway Corporation in addition to all rights and privileges enjoyed by corporations in general under the laws has the following special rights:—

a. The right to project the lines specified in Clause 1.
b. The rights to undertake Chinese and/or foreign loans for the lines specified in Clause 1.
c. The right to exercise control over the management of the lines specified in Clause 1.
d. The right, in addition, to manage all important industries belonging to the lines specified in Clause 1.
e. The right to manage all matters connected with the acquisition of Government land or the purchase of private land required for building the lines specified in Clause 1.

3. In the case of lines not belonging to those specified in Clause 1. should the Government or the original concessionaire be willing to give them over to the Chinese National Railway Corporation to be carried out the Chinese National Railway Corporation may undertake the same.

Lines other than those specified in Clause 1 may be undertaken by other companies in accordance with the regulations laid down by the Government, but such lines shall not be prejudicial to the interests of the lines undertaken by the Chinese National Railway Corporation.

4. In the case of lines built by the Chinese National Railway Corporation the date of commencement of work, the date of their completion and date of opening for traffic should be reported to the Government for registration at the time their construction is decided upon, and in the event of the work being delayed beyond the specified date the Government has the right to take other means to put the work in hand unless the delay in carrying out the matter was the result of unavoidable causes and that permission to extend the time was obtained in advance from the Government.

In the case of lines under the Chinese National Railway Corporation which in the opinion of the Government are essential for defence or military purposes and which should therefore be built first the Government may set a period and command the Corporation to carry out the matter within the said period and in the event of the Corporation not being able to carry out the matter within the period set the Government may proceed as in the last section.

5. The Government shall do its utmost to afford protection and assistance to all the lines undertaken by the Chinese National Railway Corporation.

6. All the lines undertaken by the Chinese National Railway Corporation should eventually revert to Government ownership. As regards the time limit for the Chinese National Railway Corporation management and the method of taking over by the Government, etc., the Chinese National Railway Corporation should observe the provisions governing commercial Companies in general.

As regards present and prospective laws relating to Railways and cognate affairs with the exception of such special provisions as are herein set forth, the Corporation shall strictly observe the same.

7. The Chinese National Railway Corporation when making loans or raising capital by shares, no matter whether they be Chinese or foreign, shall obey the laws of the State and shall enjoy the benefits secured by the laws of the State. As regards loans which must be guaranteed by the Government the proposed contracts should be reported to the Government for approval. As regards regulations for share capital, if shares by foreigners are concerned, the Government shall be notified for its decision.

No matter what manner of persons may invest capital in the Chinese National Railway Corporation the Government recognises only the Corporation direct.

8. Whenever the Government deems that military requirements necessitate the taking over the Corporation's lines or its exercise of preferential rights therein or when needed for ordinary transport of troops, or police, stores, emigrants, relief purposes, mails, etc., the matter of reductions in rates or free passes shall be arranged in accordance with the rules governing ordinary merchant railway companies.

9. All regulations governing rates of the Chinese National Railway Corporation lines shall be reported to the Government for registration and the Government may exercise the right to fix the maximum and minimum freight rates.

10. The Chinese National Railway Corporation shall not be transferred as a whole to another company and in case any portion of its rights be transferred the Government sanction shall be obtained.

11. The Chinese National Railway Corporation may draw up various regulations based upon these By Laws but they must be reported for registration to the Government.

12. In the event of these laws being found to contain serious drawbacks the Government in consultation with the Chinese National Railway Corporation may amend the same or the Chinese National Railway Corporation may request the Government to frame a motion to this end and such amendment or amendments be made after the National Assembly has voted upon it.

13. These By Laws shall have effect from the date of their promulgation.

THE NECESSITY FOR UNIFICATION OF RAILWAY ACCOUNTS IN CHINA

[By C. C. Wang]

One of the most important branches of railway administration and that branch which has received the least attention in China is railway accounting. About a year ago, when the writer was instructed by the Ministry of Communications to co-operate with other authorities to take over the affairs of the Railway Department from the authorities of the late Ching Dynasty, he was greatly struck by the lack of system and uniformity of the accounts rendered by the different railways under its control. In fact some of the accounts were but cash books of a most elementary nature. They could hardly be called accounts at all from the railway point of view. Moreover, each line had its own kind of accounting, and rendered its accounts in its own way. The accounts of each road not only were different from those of other roads but sometimes changed from year to year. Worse still, there was and is much useless duplication. Oftentimes one finds a complete set of accounts in the Chinese language, rendered in the old-fashioned manner, accompanied byan other complete set of the same thing in some foreign language, such as English, French, German, or Japanese. When we recall that all these railways are directly responsible to, and under the immediate control of, one authority, we cannot but be astonished by the striking lack of uniformity in the accounts.

Under such circumstances, the multifarious nature of railway business renders an efficient control of the different lines extremely difficult, and makes an intelligent judgment of the management of the various railways impossible. It is well known that it is misleading to judge the management of a railroad simply by the revenue of a certain year or even that of a number of years, without a clear knowledge as to how and from what source that revenue comes, and how the property is worked and kept up.

The usefulness of railway accounts and statistics is not limited simply to the showing of the incomes and expenditures. It is to furnish an intelligent comparison of the results of one road with those of the other roads so as to help each to learn from the experience of the others. It also assists the managers to compare the results of their own lines from year to year so as to benefit from experience.

Under the existing circumstances, however, such comparisons are out of the question. What is worse, it seems, is the fact that "dressing" or "cooking" of accounts is not only easy, but in some cases tempting. Once such an evil practice is committed great difficulty will be experienced in discovering it, for to make an effectual airing of railway matters by fathoming into the depth and traversing the labyrinth of the existing systems of accounts is well-nigh impossible, even with expert auditors. As a result, the only use which is made of the reports or accounts now rendered to the Ministry by the various railways seems to be to give employment to a certain number of clerks to compile them for the purpose of decorating the empty shelves of the Ministry.

But this disorderly state of affairs in railway accounting is not unusual, nor peculiar to China. The history of the railway administration of the world shows that the same or similar troubles existed in many countries. England, the

DR. C. C. WANG, CHAIRMAN OF THE COMMISSION ON THE UNIFICATION OF RAILWAY ACCOUNTS

birth place of railways practically had the same experience as that which we have now. It was after suffering for many years and after repeated efforts by both the Government and the railway companies that she has brought her accounts to the present state of usefulness. We are, however, even worse off, since the science of accounting has heretofore received so little attention in China. But the world will judge us, not according to what we did or what we are doing, but according to what we shall do from now on.

If we persist in ignoring the existing disorderly state of affairs, we shall be severely criticised by our neighbors and condemned by our own posterity. On the other hand, if we begin earnestly to make improvements from now on, we shall be entitled to all credit. For, generally speaking, our railway enterprise is still in its infancy, and the evils are still easy to remedy. But, if we miss the present opportunity and wait until the trunk lines are completed, our difficulties will be more than doubled. Therefore, with us the question is not to regret or complain over the past, but to endeavor to make the best out of the future. In railway matters, however, no substantial reforms of any kind can be made unless we go at it full-heartedly and with sufficient time.

After having thus reviewed our own condition, we may look at the question from a general point of view. On account of their monopolistic and other characteristics, railways are always placed under strict supervision or direct control of the State. In exercising this supervision or control, railway men find it desirable or even necessary to begin from accounting. It is largely through the accounts that a fair judgment of the management of a railroad may be made and an inside view of the affairs obtained; and it is only through a proper judgment and a clear understanding of what is going on that a proper supervision or control may be exercised. In other words, accounting is regarded as the key to the management, supervision and control of railways.

From the point of view of state railway management, or that of private lines, an efficient system of accounting is of equal importance The railway business is so multifarious in nature, and so immense in volume, that no railway can be efficiently or economically operated without good accounting. Therefore, the accounting department always occupies an important place in all railway administrations, and accounting is constantly receiving the attention of railway men with a view towards improvement.

In China the importance of railway accounting is even greater. As we have to push the construction of many new lines, foreign capital is necessarily needed. With the right kind of accounting, we can help a good deal in attracting such needed foreign capital. What the average investor wants is safe security and a reasonable rate of interest. If we can only let the world know, by a good system of accounts, what paying investments our railways are, we shall have much less difficulty in securing funds. In fact there are hardly any railways in the world which pay as well as ours. The great trouble is that the outer world does not know our actual conditions. The lack of proper account and statistics is largely responsible for this.

The importance of modern accounting is made more apparent by the evils resulting from the lack of such accounting. The Canton-Hankow and the Hankow-

Szechuan lines are vivid examples. In both cases, the deficiency in accounting has contributed a good share in bringing about the present shameful results. The investors see that so much money is put into the enterprise and then hear that so much is expended, but no one knows exactly what has become of it. If any one should endeavor to examine the accounts, he would be more mystified after the examination than before. Indeed, with such accounts and accounting, fraud is not only easy, but may be tempting. The authorities in charge of these lines were guilty in many respects, but the lack of system was also responsible. As a result, the investors became suspicious and angry. A hue and cry was raised and everything was blocked. Consequently, not only were the lines immediately concerned delayed, but the whole investing public became pessimistic with regard to railway enterprise, and thus the development of the country was kept back, in addition to giving our neighbors good and visible excuse to laugh at us.

Not only in the administration of railways, but in other modern business as well, accounting is of fundamental importance. Indeed, it is often remarked that the failure of some of our most promising enterprises, such as the China Merchants' Navigation Company, is largely due to the lack of good accounting. This is unavoidable, for to manage a modern business on a large scale without the help of a modern system of accounting is like pouring new wine into old bottles.

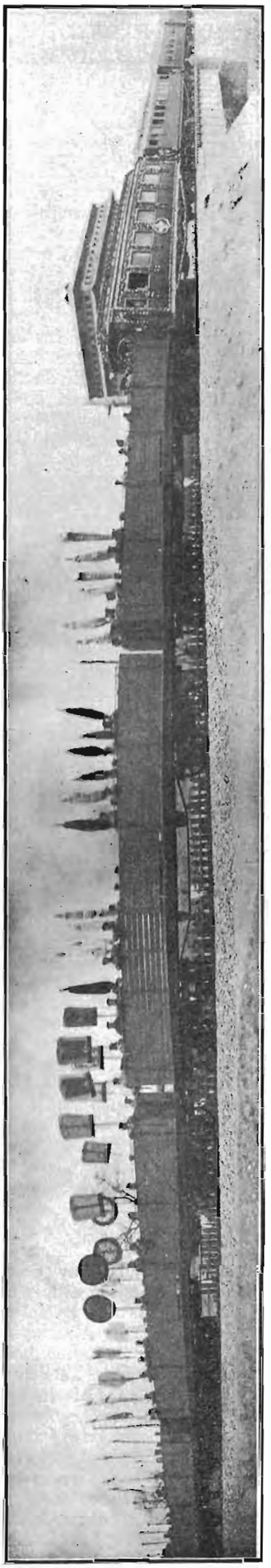
Thus, it may be said that the concealment or imperfect representation of facts, which no one is charged with the duty or furnished with the means of faithfully disclosing, will be found to underlie most of the mishaps in railway matters. There can be little doubt that many objectionable transactions would have been prevented if they were to be immediately followed by publicity. For it is regarded almost as an maxim that publicity is the most effectual preventive of frauds or other irregularities in railway matters.

It may also be added that for railway taxation and the purchase or subvention of private lines, which questions are bound to come up soon, efficient accounting is indispensable. To meet these questions by beginning with the preparation and enforcement of an efficient system of accounts, applicable to all lines, seems to be a good beginning.

But railway accounts should not only be effective, but also uniform for all lines. The importance of uniformity has been repeatedly emphasized by railway men since the forties. England began to take strong measures in this regard from 1868, when the Regulation of Railways Act was passed for the sole purpose of unifying the accounts of all railways in the country. Ever since, continued attention has been given to this matter. As late as 1911, a further step was taken to make some necessary improvements toward the unification of railway accounts and statistical returns. The railway companies themselves have been equally active, as shown by the actions of the Manchester Railway Conference of 1868 (See *Railway Times*, Aug. 23, 1868 and the publications of the Conference) and that of the British Railway Companies' Association. The Association, besides other actions, has appointed a standing committee for the purpose of securing uniformity of practice among all railway companies in rendering their accounts (See Report of Committee appointed by the Board of Trade on railway accounts and statistical returns, 1909). America began in 1887 and has made constant improvements since then. The accounting and statistical matters constitute a great part of the work not only of the Interstate Commerce Commission, but of the railway companies as well. The continental countries also have been paying much attention to this question. Indeed, the unification of railway accounts forms a bright chapter in the railway history of many countries. So far as experience shows, there is hardly any question that the railway accounts of a country should be unified.

The advantages of a unified system of railway accounts are numerous. Besides preventing the "dressing" of accounts to a considerable extent, the auditors and inspectors would have a convenient guide in their effort to audit the accounts or to ascertain the true state of affairs. The common form would become familiar and people would know what to verify. Moreover, the science of accounting would become somewhat easier to our people; and once one learns the science, one may be employed in any railway office, and may also be transferred from one line to another without much inconvenience. What is more significant, as mentioned before, is that a uniform system will enable those in control of railways to compare intelligently the results of the different systems so as to assist in forming their judgment of each management as well as to enable the directors themselves to profit by one another's experience. Where circumstances are nearly similar and where there is no downright falsification, such comparisons would prove of great value.

To bring about uniformity in accounting, the first step is to adopt some uniform forms of accounts, with rules and regulations governing the application of the same. In adopting these forms, etc., expert knowledge should be used. The aim should be to study the actual condition of our railway accounting first and then to adopt the forms, etc., to meet the existing conditions. In other words, the forms and regulations, etc., should be practical rather than ideal. Stringent rules should not be laid down except after thorough examination of the actual state of affairs. What is adopted should be sufficiently elastic to



FUNERAL OF THE DOWAGER EMPRESS.—FUNERAL TRAIN LEAVING PEKING. THE DECORATED COACH CONTAINED THE COFFIN: THE PRINCES WHO ATTENDED THE FUNERAL OCCUPIED THE CAR ADJOINING *Specially taken for the Far Eastern Review.*

meet the varying circumstances of the different lines and at the same time precise enough to enable the directors and the Ministry, as well as the public, to make inteligent comparisons. The guiding principle should be to expose the results of the management and the financial position of the lines as clearly and systematically as possible so that the country may know what our railways are doing.

But uniform forms and regulations alone are not enough to insure uniformity in accounting. There is always room for endless dispute as to whether certain items of expenditure are for renewals or new work or operation. Much doubt could also arise as to whether capital or revenue is to be charged. Therefore, the incomes and expenditures should be classified and put under specific headings, item by item, and the scope of each heading should also be definitely defined. In this respect, the experience of other railways may prove of much help to us. In other words there should be uniformity of practice with regard to the keeping of accounts and the filling up of the prescribed forms.

During the first few years of application, a standing committee of experts and other responsible men may be appointed to watch the progress of the application of the system, to correct defects that may be discovered and to make improvements whenever possible, as well as to settle doubtful questions which may arise from time to time.

Side by side with the unification of railway accounts, railway statistics may well be unified also. In railway administration, statistics are essential to improvements. Much like mercury, with regard to temperature, it tells the rise or fall of the enterprise. Indeed, some of the most able railway administrators practically do little besides the study of a few sheets of statistics every morning.

But the main trouble with us heretofore, was not exactly that we did not know what should be done, but oftentimes our lack of determination, perseverence and definite responsibility. It may be easily recalled that many laudable reforms have been blocked or given up unfinished on account of the lack of definite power and responsibiiity or the change of certain responsible authoritics.

It must also be borne in mind that in enforcing any uniform system of accounts, much difficulty, or perhaps even opposition, will arise. After the different lines have been accustomed to their own systems and their own way, they will naturally find much inconvenience in adopting any new system. This has been the experience of other countries, where we almost invariably find much criticism and opposition against the introduction of uniform accounting, especially at the beginning. But after an earnest trial they have invariably found that their inconvenience in adopting the uniform system, is more than repaid. We may reasonably expect some difficulties of this sort, but such difficulties are likely to be, or should be only temporary.

From the above, it may be seen that the unification of railway accounts and statistics is recognized by railway authorities of many countries as most essential. Our own disorderly state of affairs especially demands some sort of a uniform system. Therefore, if some uniform system now be adopted, much confusion and irregularity may be prevented in the management of our railways and some proper publicity may be given to our railway property. Even should the existing roads fail to adopt it, for the guidance of the future lines alone it is worth while. Sooner or later, the unification of railway accounts and statistics is bound to come. When it comes, it will occupy a bright chapter in the history of our railways.

Unification Committee Appointed

The Minister of Communications has given distinct earnest of his intention to encourage a reorganisation of railway matters by appointing a Commission to investigate the existing systems of accounting and inaugurate a unified system for adoption throughout the country.

Whilst the Director-General of Railways has been made the head of this Commission the active head will be Dr. C. C. Wang, who has been appointed Chairman.

Already several meetings have been held, and as this is the first step in a movement to bring the railway system to a plane where it may be managed efficiently and profitably, we publish herewith the procedure to be adopted to give effect to the work of the Commission, and the regulations governing that body:

PROCEDURE OF THE COMMISSION

The procedure with regard to the unification of railway accounts shall be divided into three periods:—

Period of Preliminaries.
Period of Investigation.
Period of Preparation.

Period of Preliminaries:—(about ten days).

1.—The Regulations of the Commission shall be prepared and adopted with the sanction and enforcement thereof by the Ministry of Communications.
2.—The Chairman of the Commission shall be appointed by the Minister and vested with a seal of service.
3.—The Commissioners shall be recommended to the Minister for appointment, and the members of the secretarial staff shall be appointed by the Chairman.
4.—The Commissioners shall be commissioned by the Minister.
5.—A preliminary meeting shall be held for the discussion of the method of procedure in the second period.
6.—The formation of the Commission shall be officially announced by the Minister, or through other proper authorities, to the railways and to those organizations having close connection with the Commission.
7.—The Chairman of the Commission shall inform the railways of the sending of Commissioners to study the systems of accounts and statistics and the practice and working of the accounting department, and shall request each railway to prepare separately, within three months, a detailed statement of its accounting system and the rules and regulations thereof, giving views and suggestions as to what and how improvements upon its present system can be made. The Ministry of Communications shall request the Ministers accredited abroad, such as Great Britain, the United States of America, Germany, Switzerland, etc., to secure from the railway authorities the rules and regulations governing, and the different forms used in railway accounts and accounting for reference.

Period of Investigation:—(about three months).

1.—The Commissioners shall visit the different railways assigned, and study carefully the systems of accounts, and the practice and working of the accounting departments.
2.—The associate members of the Commission shall prepare detailed statements prescribed in sec. 7, first period.
3.—A representative shall be sent abroad to engage expert advisers.
4.—The secretarial staff shall attend to translations, the regular secretarial business, etc.

Period of Preparation:—(about nine months).

1.—A formal meeting shall be held for the preparation of the method of procedure.
2.—The Commissioners, together with the expert advisers, shall visit the different railways previously designated and shall spend three days on each railway in investigation.
3.—The Commission shall begin its work after the completion of the work above enumerated.
4.—Besides reporting its progress to the Ministry from time to time, the Commission shall make a detailed formal report at the end of its term, setting forth all the important questions discussed or settled, the method of procedure followed, and the conclusions arrived at, together with its suggestions and recommendations regarding the unification of railway accounts.

Besides requesting railway accounting officers to express their opinions from time to time, the Commission welcomes all suggestions which may help to bring about the unification of railway accounts of Government lines.

REGULATIONS OF THE COMMISSION

I. *Name.*—The Commission shall be known as the "Commission on the Unification of Railway Accounts."
II. *Object.*—The Commission shall unify the existing systems of accounts of Government Railways.
III. *Powers.*—The Commission shall be subject to the Ministry of Communications and under the direct supervision of the Minister.
IV. *Organization.*—The Commission shall consist of

1.—A chairman and a vice-chairman, who shall be commissioned by the Minister of Communications.
2.—Foreign experts in railway accounting, who shall be engaged as advisers by the chairman, with the approval of the Minister.
3.—Six members, whose qualifications shall be graduates of universities or technical institutions in railway accounting, administration, or law, or experienced in railway accounting, who shall be commissioned by the Minister upon recommendation of the chairman.
4.—Six associate members to be chosen from among the accounting officers of the principal railways by their respective directors who shall be appointed by the Minister upon the recommendation of the chairman.
5.—A secretarial staff who shall be appointed by the chairman.
6.—Assistant members to be chosen partly by the railways and partly by the chairman, with the approval of the Minister. These assistant members must be educated or experienced in railway accounting.
7.—The number of the above-mentioned officers may be changed by the chairman with the approval of the Minister.

V. *Duties.*—

1.—The chairman shall take general charge of the affairs of the Commission. The vice-chairman shall assist the chairman to execute the work of the Commission for which they shall be held responsible.

2.—The advisers shall give their opinions and suggestions upon questions brought before them by the chairman and the Commissioners.

3.—The Commissioners shall assist the chairman in carrying out the work of the Commission.

4.—The associate members shall render assistance to the Commission in the unification of railway accounts. They shall act as advisers on questions concerning their respective roads.

5.—The secretarial staff shall take charge of the correspondence, telegrams, translations, accounts, etc.

6.—The assistant members shall do the work of the Commission as directed by the chairman.

7.—The appointment and dismissal of the above mentioned officers shall be made according to contract and the regulations of the Commission. Officers and members of the Ministry of Communications or of Government railways, who are transferred to serve on the Commission, shall continue to receive their regular salary. They shall return to their respective posts in the Ministry or the railways when the Commission is dissolved.

VI. *Expenses.*—The expenses of the Commission shall be paid by the treasurer of the Ministry of Communications according to the budget submitted by the Chairman and approved by the Minister. In case of any extraordinary expenditures not included in the estimates, the Chairman shall report such expenditures to the Minister, but the amount of such additional expenditures shall not exceed twenty-five per cent. of the original budget.

VII. *Detailed Regulations.*—Detailed regulations governing the work of the Commission may be adopted from time to time by the Chairman, with the approval of the Minister, but they shall not be in conflict with the regulations of the Commission.

VIII. *Term.*—The term of the Commission shall be one year, beginning from the day on which the regulations are approved by the Minister. The term may be extended, if necessary, with the approval of the Minister, in which case an additional budget shall be made.

IX. *Report.*—Besides reporting its progress to the Minister from time to time, the Commission shall make a formal, detailed report of its work with conclusions, suggestions and recommendations at the end of the term for enforcement, by the Ministry.

X *Revision.*—The regulations of the Commission may be revised or modified, if necessary, upon recommendation of the Commission with the approval of the Minister.

THE FUNERAL OF THE LATE DOWAGER EMPRESS LUNG YU

On the morning of April 3, exactly a fortnight after the impressive National Memorial Services, the mortal remains of the late Lung Yu, Dowager Empress, left Peking by train for their final resting place. The coffin is to be entombed at Hsi Ling, the Western Imperial Tombs, at Liangkachuang, which is connected with Peking by a branch line joining the Kin-Han Railway at Kaopeitien. Hsi Ling is the mausoleum of the late Emperor Kuang Hsu, and the late Empress Tzu Hsi.

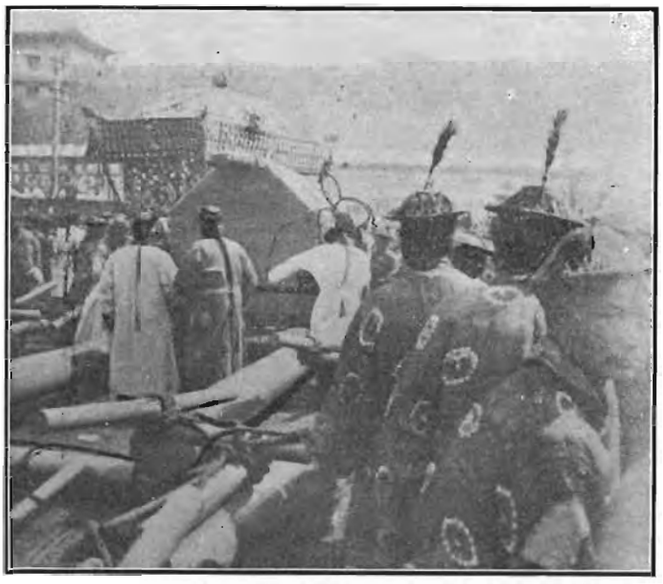
The interesting feature to readers of the FAR EASTERN REVIEW is that this is the first time in the history of China that the remains of royalty have been conveyed by train to the Tombs.

The funeral car was specially prepared for the occasion, an old third-class coach being deprived of one end to permit of the coffin being wheeled in, and being repainted and decorated. It was handsome and effective for the purpose. One of the photographs published in this issue shows how the bier was wheeled into the car.

The funeral procession was timed to leave the Palace at 7 a.m. and much earlier than that crowds of spectators lined both sides of the road from the Palace to the Kin-Han Railway Station.

The funeral procession did not emerge from the Tung Hua Gate of the Forbidden City until about 8 a.m. It was preceded by a number of camels laden with tent-poles, tents, and other equipage. They were followed by fifty white ponies, each led by a groom. Next came a train of followers attired in rainbow muslin with thick felt hats, from the centre of which yellow feathers projected. They escorted three Peking carts with yellow wheels and bodies, and silk covers of the same colour. Behind them were the three sedan chairs, also of Imperial yellow. More attendants, carrying wooden halberds, and embroidered fans, banners and umbrellas, marched immediately in front of yellow palanquins containing artificial flowers. These were escorted by Buddhist lamas in yellow robes crossed by crimson sashes, each carrying a large stick of smouldering incense. They were succeeded by a troop of cavalry of the Imperial Guard, and a detachment of mounted constabulary.

The bier was preceded on each side of the road by double files of infantry of the Third Division, in full marching order, with arms reversed. Between these troops were attendants who at every few steps flung handfuls of fictitious paper coin into the air. This continuous shower of paper discs heralded the approach of the bier itself, which was covered with gorgeous yellow silk, embroidered with phœnixes. It was carried by eighty coolies and was of such enormous weight that the bearers staggered under the burden, advancing only a few feet at a time.



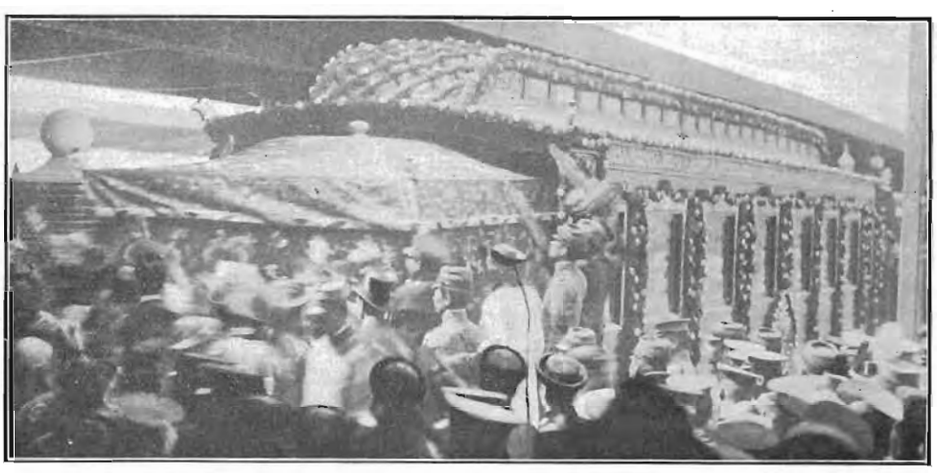
FUNERAL OF THE DOWAGER EMPRESS.—COFFIN BEING REMOVED FROM THE CATAFALQUE AT PEKING RAILWAY STATION. *Specially taken for the Far Eastern Review.*

At the Kin-Han Railway Station, the coffin was transferred to a specially prepared bier which was placed on a low truck, and was pushed up an incline into the funeral car, the band meantime playing Chopin's funeral march.

Officials representing every department of the Government, and strong detachments of troops, were assembled at the station.

Among those who accompanied the ex-Empress' remains were Generals Yin Chang and Feng Kue-chang, Mr. Chang Kuan-chien, Governor of Shuntien-fu; Princes Na Yen-tu and Tsai Yun; Mr. Chu Chi-chien, Minister of Posts and Communications; Mr. Yi Kung-cho, Director-General of Railways; Mr. Tseng Kuang-hsiang, Inspector-General of Railways; Mr. Kuan Mien-chun, Director of the Peking-Kalgan Railway, and several other officials specially deputed by the Ministry of Communications.

The train steamed slowly out of the station just after noon, troops presenting arms and a military band playing a solemn dirge.



FUNERAL OF THE DOWAGER EMPRESS.—THE BIER BEING WHEELED INTO THE SPECIAL FUNERAL CAR AT PEKING FOR TRANSPORTATION TO THE WESTERN TOMBS. *Specially taken for the Far Eastern Review.*

It is reported from Santiago de Chile that a Japanese company has decided to erect two fish-curing establishments in Chile, one in the north and the other in the south. The Chilean Government is affording special facilities to the company, which will introduce Japanese methods of fish-curing in Chile.

THE BIG LOAN

The Agreement Signed at Last

Sometime after midnight on April 27 the Reorganisation Loan of £25,000,000 was signed at Peking. Readers of the Far Eastern Review will recollect that in October 1912, we published a survey of the negotiations up to that time, while in the February issue a summary of the Loan Agreement appeared. In March we published the full text of the Agreement and the subsidiary Agreements.

The conditions remain the same in many respects, but, of course, the American Group withdrew from participation and the Powers interested are Great Britain, France, Germany, Russia, and Japan. The terms remain the same with the important modification that the rate of interest is fixed at five per centum, while China will receive 84 for the bonds. It will be remembered that under the original Agreement the interest was to be five and a half per centum and China was to secure a net price of not less than 90½ for the entire loan.

The Kuomintang Party warned the Bankers against signing the Agreement, declaring that unless the Agreement were approved by Parliament it would be considered invalid. However, the Bankers replied that the Agreement was with China and that they could not take official cognizance of a protest from a political party. It is understood at the moment of writing that the Kuomintang is contemplating measures to render the protest effective.

Some time prior to the signing of the Agreement, acting on good advice, the Chinese Government selected a number of foreigners for employment in the reorganisation of the Salt Gabelle, and these are acceptable to the Group.

The Government has been successful in securing Sir Richard Morris Dane, of the Indian Civil Service, as Adviser to the Salt Administration.

Sir Richard Dane has been Inspector-General of Excise and Salt for India since 1907. He entered the Indian Civil Service in 1872 and has held various important posts, including that of Deputy Secretary to the Government of India in the Finance Department, and Commissioner of North India Salt Revenue.

As Advisers to the Audit Department the Government has appointed M. Konavaloff, a Russian, who is a Commissioner of Customs, and M. Padoux, a Frenchman. The former was the Inspector-General's Private Secretary in 1900, and was Commissioner of Customs at Newchwang during the Russian occupation. He was the first Commissioner of Customs at Harbin, where he succeeded in safeguarding Chinese interests while maintaining cordial relations with the Russian authorities.

Other foreigners selected are as follow:

A Japanese, Mr. Tei Nagasama, formerly Japanese Consul-General at Tientsin, where he made an elaborate study of the Changlo Salt Administration. He is a brother of the Chinese Secretary of the Japanese Legation in Peking.

A German, Herr Mohr, has been appointed on the recommendation of the Deutsche Asiatische Bank. He has made a special study of salt administration in Shantung, where he will remain.

A Danish subject, Mr. Gimbel, the well-known chemist and engineer, who will probably go to the Lianghuai Administration.

An Irishman, Mr. Cooper, a graduate of the School of Economics, London, and latterly a Professor of Peking University. Mr. Cooper is an able accountant and is already attached to the Head Office of the Salt Inspectorate.

An America, Mr. Palmer, a graduate of Cornell University, goes to Newchwang.

A Japanese industry in which improvement and standardisation are needed is the manufacture of olive oil. With this in view, the Department of Commerce and Agriculture has sanctioned a grant of Y.600 to the experimental farm in Kagawa prefecture for the purchase of up-to-date presses.

PUBLICATIONS

The China Year Book 1913

By H. G. W. Woodhead (Editor of the *Peking Daily News)* and H. T. Montague Bell, B.A. (formerly Editor of the *North-China Daily News)*. Crown octavo. About 730 p.p. With a portrait of President Yuan Shih-kai and a production map of China. London: George Routlege & Co; New York: E. P. Dutton & Co.

This is the second issue of the *China Year Book*. The first issue promised well, and the issue now at hand has fulfilled the promise remarkably well. The work of compilation for such a book is an extremely difficult one, for China has not yet reduced statistics to a science, and what Mr. Woodhead—who is the active editor in China, Mr. Bell being in London—has accomplished in the direction of providing the most reliable data obtainable on all phases of interest in the Republic, is highly creditable.

There is no book of reference published on Chinese matters which can approach the *China Year Book* for general completeness and usefulness, and no one interested in China could be without a copy and claim to be in touch with the solid facts concerning the Republic. Certainly no library could afford to neglect to shelve the work, for it should be the readers' *vade mecum*.

The first issue described China as it was on the eve of the Revolution, and this one brings it to date. The book has been almost entirely rewritten for the 1913 edition, and expanded by about 250 pages.

In addition to all the features of the first edition—which have been thoroughly revised, and brought down to date—many additions have been made.

The railway section has been considerably expanded. The Chapter on Finance, which occupies upwards of sixty pages, deals exhaustively with the finances of the Republic, the Imperial Budget for 1912, the Salt Gabelle, China's Foreign debts, and the Loan Negotiations in 1912.

In the Chapter upon the Government the new Official Systems of every Ministry are given.

Chapter XXI (Constitution Reform) contains careful translations of the Election Laws of the Senate, House of Representatives, and Provincial Assemblies.

The treatment of Religions has been greatly extended, particularly as regards Buddhism, and the Lamaist system of Tibet.

Dr. Douglas Gray, of H.B.M's Legation, has contributed a chapter upon Public Health, to which are appended the resolutions of the International Plague Conference, and details of the North Manchurian Plague Prevention Service.

Some seventy pages are devoted to a political survey of the first ten months of 1912, all official documents of permanent value being quoted textually.

An entirely new feature is a "Who's Who" of some three hundred prominent Chinese officials, though this can bear improvement.

In the section devoted to "Greater China" recent developments in Mongolia and Tibet, are fully dealt with, and a complete list of Mongol Tribes, Banners and chieftains is given.

Chapter XXVII "Miscellaneous" contains directories of Foreign Legations and Consulates, and the Customs and Posts, the full text of the International Opium Convention of January 1912, and an account of Political Societies and Parties in China.

An Index to some 4,000 subjects adds to the utility of the work for purposes of reference.

Leiman Bros.—An attractive circular has been issued by Leiman Bros., of 62 John Street, New York, in reference to their vacuum pumps and vacuum cleaning outfits. The booklet is well illustrated and gives a large amount of valuable information in relation to Leiman Bros. manufactures.

A E G Journal.—The January and February numbers of the A E G Journal issued by the Allgemeine Electricitaets Gesellschaft contain several articles of interest and a number of remarkably fine illustrations.

Scherzer Rolling Lift Bridges.—An extremely attractive volume has been issued by the Scherzer Rolling Lift Bridge Co. to illustrate their moveable bridges. This is the second edition and is really a work of art. The illustrations are splendidly reproduced and a complete summing up is given of the reasons why the rolling lift bridge system is a logical necessity to meet modern conditions. A notable section of the volume is that devoted to drawings showing views of the Scherzer Rolling Lift Bridges in operation or under construction.

Mr. Albert H. Scherzer, President of the Scherzer Rolling Lift Bridge Co., has issued a thoughtful and valuable booklet entitled "Great Money Energy for Individual and Public Welfare." We are sorry that we have not at the moment space to give an extended notice of Mr. Scherzer's work which points out the immense waste that results from the failure adequately to control the water supply of the United States. The arguments adduced are interesting and substantial, and the booklet should certainly be widely read and considered.

American Blower Company.—A splendidly got-up publication is the illustrated sectional catalog No. 316 of the American Blower Company. This catalog relates to the "ABC" moist or dry kilns, and the information given is most complete. Bulletin No. 352 of the "ABC" gives exhaustive information about the "Detroit" steam traps.

Trus-Con Products.—The second edition of the handbook on Trus-Con Products is a remarkable and interesting work. It contains 98 pages fully describing the products of the well-known Trus-Con laboratories at Detroit, Mich. The value of the handbook is greatly increased by the excellent illustrations.

Handbook for China.—An excellent handbook for China by Carl Crow has been issued by the Hwa-Mei book concern. This work is intended particularly for the newcomer to China, but will also be found eminently serviceable by residents. Descriptions of various parts of China are given with information as to hotels, routes and fares. There are several plans of cities in China and numerous interesting illustrations.

Chosen Railway.—The Chosen branch of the Japan Tourist Bureau has issued an attractive leaflet containing information in regard to the Korean Railways. A timetable is included.

South Manchuria Railway.—An interesting history of the development of the South Manchuria Railway since its inception in 1906 has been published. It is fully illustrated and contains much valuable information about this progressive line.

Chicago Pneumatic Tool Company.—Bulletin No. 124 issued by the Chicago Pneumatic Tool Company deals particularly with pneumatic riveting, chipping, calking and stone hammers. The booklet is excellently produced and well illustrated.

Mr. R. J. Ward, known in Japan as Omori Ward, who went to England to live in retirement after a forty-two years' residence in the Far East, has died at the age of 65. Mr. Ward, arrived in Japan in June 1871, entered the service of the Imperial Government Railway Department and was closely connected with the railway development of the country. With the exception of a short trip to Shanghai he only left Japan once during his forty-two years' residence.

The contract for the engagement of Mr. A. W. U. Pope, General Manager of the Shanghai-Nanking Railway, says the *Peking Daily News*, has expired, and owing to the meritorious services rendered by him the Director, Mr. Chung Wen-yao, has recommended to the Ministry of Communications the continuance of the contract for one year.

Sir Robert Bredon left Peking on April 15 for a brief holiday in Europe.

FAR EASTERN RAILWAYS

PROJECTED RAILWAYS IN NORTHERN KIANGSU

News from Chinese sources indicates that an unusual amount of activity is being displayed in regard to the building of projected railways in Northern Kiangsu. It is stated that arrangements have been made to build the Tsingkiang-pu-Hwaian-fu section of what is called the "Kiangsu Railway" at once, all necessary land having been secured, and a foreign engineer having been engaged to take charge of the work.

What is precisely meant by the general term "Kiangsu Railway" has been doubtful for the past few years.

Early Schemes

One of the earliest schemes was the Kwachow-Tsingkiang-pu line, plans for which were mooted over some five years ago, when work was started on the Shanghai-Sungkiang line.

It was understood at the time that the Kiangsu Railway Company would build the Kwachow-Tsingkiang-pu Railway soon after the completion of the Shanghai-Sungkiang section. But after further deliberation, it was proposed to change the route to make it the Tsingkiangpu-Tungchow line, as Tungchow is considered a more important town than either Kwachow or Yangchow.

This new proposal has had the approval of the majority of the Kiangsu people, although strong objections were raised by the merchants in the immediate vicinity of the old route. Especially vehement were the protestations of the Yangchow and Chinkiang merchants. They contend that on account of inadequate means of communication their trade is suffering seriously, and that they must have this railway to relieve the situation. It has been pointed out to them that the old route would have been an excellent one had it not been parallel to the Grand Canal, but since it is so, there would be keen competition by water-borne traffic. The income the line would get after its completion would not be very large and, therefore, it would not be a profitable investment; instead, it would be a burden on the community and thus defeat its own purpose. But the case with the new route is different. It goes to Tungchow, which is in a south-easterly direction, and it passes several important cities. So it has been decided that the "Kiangsu Railway" is to be the Tsingkiang-pu-Tungchow line.

It will be remembered that the Tientsin-Pukow Railway was originally designed to connect with Chinkiang, but in these early times the Northern Kiangsu merchants did not realize what huge benefits a railway would give them, so, when it was ultimately decided that instead of running to Chinkiang the line was to go to Pukow, there was very little opposition exhibited on the part of the Northern Kiangsu people. But now the rising prosperity of the districts where that Tientsin-Pukow line passes has demonstrated to them clearly the enormous value of railways. They have become aware of the fact that Nanking is getting a great volume of traffic which would have been theirs, and they are deploring their short-sightedness. The desire to make up their loss explains their enthusiasm at present in discussing railway schemes.

Some New Plans

It is reported that recently the Chinkiang and Yangchow merchants had a discussion about railway projects and are determined to have a railway of their own. Their plan was to build a line from Liuhaockow, opposite Chinkiang, to Siennumiao, the famous rice market.

They are reported to have raised enough funds to carry out this project, and the work on this line will soon begin. This short railway will be ultimately extended to Shaopo, to effect a junction with the Tsingkiang-pu-Tungchow Railway.

There is another projected railway crossing Northern Kiangsu which is of far greater magnitude and importance. It is the railway which will connect Kaifeng with some seaport. Originally it was intended to have a port at Haichow. The line would from there run through Hsuchow-fu, of Kiangsu and Kaifeng, of Honan.

This is the first section of the so-called "Belgian" line, or the Lanchow Railway, destined to be one of the longest trunk lines in China.

At Hsuchow-fu, it will effect a junction with the Tientsin-Pukow Railway, and at Kaifeng, with the Peking-Hankow Railway, thus making Northern Kiangsu accessible to the interior provinces. The economical advantages to Northern Kiangsu in this respect cannot be over-estimated, because with efficient means of communication, great developments will take place, and the familiar expression "poverty-stricken Kiangpeh" will soon cease to be true.

The Department of Industry has decided to open up Haichow as a trading port. The site for the port has been selected at a place called Sinpu. The Industrial Department has written to the Communications Department inquiring whether the trunk line from Hsian-fu will run to Haichow as originally designed or will there be any change from this route, so that they may formulate plans accordingly. They also request that a day be appointed to hold a conference regarding this matter.

Three Projected Lines

There are at present three projected railways in Northern Kiangsu, including the short line from Liuhaokow to Siennumiao. This short line will bring Yangchow and Siennumiao into close touch with Tungchow in the east and Tsingkiang-pu in the north. It will also enable the northern cities to get into quick communication with southern cities through Chinkiang, which is on the Shanghai-Nanking Railway.

The Tsingkiang-pu-Tungchow line will pass through the following cities: Tsingkiang-pu, Hwaian-fu, Paoying, Kaoyu, Shaopo, Taichowku, Rukao and Tungchow. On the completion of the Tungchow line, an extension may be made to Haimenting.

Haichow, Hwaian-fu, Yangchow, and Haimenting are salt manufacturing centres, and there is no doubt that these projected railways will have an important bearing on the salt transportation problem. The railway will give rapid transit, regular and efficient service and cheaper freight, and the Government will reap great financial benefits by it.

Tungchow is on the bank of the Yangtse River and is an important industrial town. It has cotton, silk-spinning and weaving factories, and bean-oil mills. It produces bean-oil, calico, native cloth, and flour, and it also carries on a thriving fishing trade. It possesses a good harbor named Tien-Sun-kong, and is a port of call by river steamers.

A great amount of rice, wheat, bean, salt and cotton from the northern towns are sent to Tungchow for export.

The ordinary means of transportation are by carts and junks, which process is slow and irksome, and the demand for a railway is growing more emphatic. One of the warmest espousers of the cause is Mr. Chang Chien, who took money out of his own purse and sent out several engineers to survey and map out the route from Tien-Sun-kong at Tungchow to Tsingkiang-pu, passing through Rukao, Taichowku, Kaoyu, etc. After several months' work, the survey was completed.

It was at this juncture that Chinkiang and Yangchow merchants started a hot dispute over the scheme, but that had no deterring effect upon Mr. Chang Chien, and he forthwith made arrangements to procure the necessary funds. He first tried to induce the Chinese merchants to invest in the enterprise, but met with no success. Then he turned to the French merchants, represented by Baron Cottu, and, it is reported, floated a loan of 4,500,000 francs at 4½% annual interest, with 5% discount, repayments to be made within thirty years.

Mr. Chang Chien has recently been in Shanghai concluding the negotiations, and as soon as the first advance is made, the work on the railway will be started.

With the opening up of Northern Kiangsu by a network of railways, industry and commerce will at once be given a fresh impetus, and the land will soon thrive. To complete the transformation, an adequate reclamation scheme must be carried out, especially in what has been termed the "famine district"—the lowland country surrounding Tsingkiang-pu.

The Kaifeng-Haichow Section

The Kaifeng-Haichow line is of great importance, as it will traverse a wide area, pass through two provinces, extending itself to Lanchow, capital of Kansu, on the one hand and join with the Tientsin-Pukow Railway and the Peking-Hankow Railway, on the other. Another probable aspect of this line is that it will make the present unimportant Haichow into a useful seaport, and thus connect the interior with the ocean routes by a straight line.

The value of Haichow as a terminus is much enhanced by its favorable situation. It is near the boundary line of Kiangsu and Shantung, and it is very near to Tsingtao. It is also within a compartively short distance of Nagasaki. By developing Haichow China can have a port of her own at an important point on the coast.

The Kaifeng-Haichow Railway as it will affect Kiangsu, may be conveniently divided into two sections: the Kaifeng-Hsuchow-fu section, and the Hsuchow-fu-Haichow section. The probable points of contact on the Kaifeng-Hsuchow-fu section are Chenliu, Chihhsien, Suichow, Ningling, Kueiteh-fu and Tongshang.

From Hsuchow-fu to Haichow, there are three routes: (1) from Hsuchow-fu to Haichow, via Pechow, which is in a straight line; (2) by following the old Yellow River to Sutsien, and then to Haichow, which is in the shape of a curved line; (3) by going south-east to Sutsien and then northward to Haichow, which resembles the two legs of a right-angled triangle. The straight route calls for less expense, but from the economic view, the route via Sutsien and Tsingkiang-pu would be most advantageous to the development of Northern Kiangsu, and is therefore the best route.

A rough estimate of the expenditure in building the line has been prepared by an engineer and is as follows:—From Kaifeng to Hsuchow-fu, 560 *li*, will cost about Tls. 7,000,000; from Hsuchow-fu to Tsingkiang-pu, 340 *li*, will cost about Tls. 4,000,000; from Tsingkiang-pu to Haichow, 240 *li*, will cost about Tls. 3,000,000, and an extension from Haichow to the beach, reclamation and port-building, about Tls. 3,000,000. In all, it will cost approximately Tls. 17,000,000.

Northern Kiangsu has been visited by several famines during the past few years, and the country has been greatly impoverished. One of the immediate advantages this railway will give is that it will afford substantial relief to the famine-stricken people by giving them work. It will not only help them to tide over the construction period. It will also enable them to find means of living. After the completion of the railway traffic will grow, the town will flourish and demand for labor will increase.

The Tsingkiangpu-Haichow Section

It will be interesting to note that a short section at Tsingkiang-pu has been actually completed. It runs from Tsingkiang-pu north-

ward to Yangchwang, and the work was supervised by a Chinese engineer, Mr. Tu. This section covers a distance of about 10 miles, and a bridge was built across the old Hwangho, a little way north of Tsingkiang-pu.

The Loan Agreement between the Chinese Department of Communications and the Belgian Railway and Tramway Company for the building of the "Kansu-Shensi-Honan-Seacoast Railway" was signed on September 24, 1912. It is significant to note that the last name is in the general term "sea-coast," for it is not yet decided whether the Terminus will be at Haichow or not. It is stated in the Agreement that the eastern terminus may be set at any town north of the Yangtse River, and there is talk now going on to make Haimenting the eastern terminus. But Haichow, nevertheless claims attention. There are, it is claimed, advantages in Haichow to warrant its being made into a terminus of a long trunk line.

The Liang-Hwai Salt Commissioner went to Peking a short time ago to confer with the Finance Minister on the subject of this line. He urged that the Tsingkiang-pu-Haichow section be built as soon as possible, declaring that a great saving would be effected in salt transportation fees. He stated that at present, the salt freight per year was Tls. 800,000. Railway transportation would reduce it to Tls. 400,000, and with other merchandise, the line would be of great profit to the Government.

Mr. Tu, engineer for the northern lines of the Kiangsu Railway Company, made a survey of the section from Tsingkiang-pu to Haichow, and we give below a translation of his report:

Physical Conditions

1. From Tsingkiang-pu to Nan Liu Tang-ho, is 104 *li*. The land is generally level; there are neither high elevations nor broad waterways. The earthwork and bridge work will not be costly.

2. From Nan Liu Tang-ho to Pe Liu Tang-ho is 34 *li*. The land is a little lower, and during the flood season of 1896, the water was 3 ft. above the ground. The earthwork should therefore be at least 7 ft. On the average, 3,000 *fongs* (one *fong*=10 sq. ft.) of earthwork per *li* will be required.

3. From Pe Liu Tang-ho to Tukow-ho, is 18 *li*. This route is protected by a dyke, and there is no danger of a flood. The earthwork and bridge work will not be costly.

4. From Tukow-ho to Tayisan, is 20 *li*. The water rose to five feet above the ground during the flood of 1896. The earth work should be eight feet high and four feet wider than the ordinary width. Stone protection should be provided on the sides to make it strong enough to resist flood water. The earthwork of this part would be the most costly of the whole section.

5. From Tayisan to Panpu is 28 *li*. The earthwork should be 6 ft. high, averaging 2,700 *fongs* to the *li*.

6. From Panpu to Sinpu or Haichow is 40 *li*. The land is higher, and there is no danger of floods. The earthwork of this section should be the least costly of the whole section.

From the foregoing, it will be seen that a greater part of the line runs through lowlands, and is liable to floods. To avert the danger, it will be necessary to open up the six locks which are at the following places: 1. South Liu Tang-ho; 2. North Liu Tang-ho; 3. Nijeh-ho; 4. Liu-li-ho; 5. Tungmen-ho; 6. Niutun-ho.

At ordinary times, there is a difference of as much as two feet between the water-surface of the east and west locks, and in the highwater season, the difference becomes as much as six feet. The bed of the Yen-ho, is comparatively level; the current is slow, and with the six locks intercepting its progress, the water finds it difficult to flow down, and therefore floods are frequent. If the six locks were opened, the water will flow into the sea rapidly, and floods will be prevented. This work may be carried out at the same time as the railway is being built, and it will give lasting benefit to the community.

Construction Work

1. *Earth Work.*—The whole section is 244 *li* in length, and the earthwork, averaging 3,000 *fongs* per *li*, will amount to about 732,000 *fongs*.

2. *Bridge Work.*—The longest bridges to be built are those that cross the South and North Liu-tang-ho: these will be 100 ft. in length. Bridges of 40 ft. to 60 ft. may be put across such rivers as the Tachien-ho, Sichien-ho and Hanyang-ho, etc.

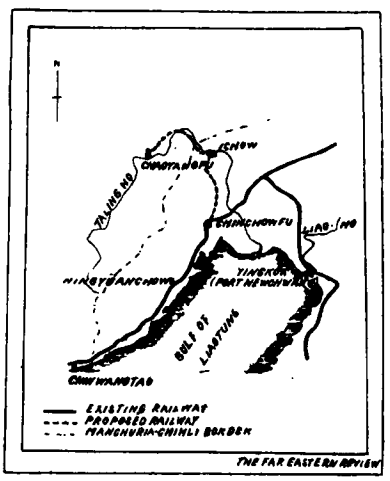
3. *Railway Stations.*—There will be ten stations in this section, viz., Tsingkiangpu, Hsipa, Tahinchwang, Liangkiayi, Kaokiakow, Pechaokow, Tayian, Chungcheng, Taiping, and Sinpu.

It may be estimated that the roadbed will cost on the average about $8,000 per *li*, and that the construction cost, including iron rails, sleepers, stone, rolling stock and other items will amount to another $8,000, thus bringing the total construction cost to about $16,000 per *li*. The total of the whole section of 244 *li* may cost roughly $4,000,000.

Probable Income from the Line

1. *Salt Freight.*—This line will handle about 4,000,000 bags of salt, at 10 cents per bag, amounting to $400,000.

2. *Bean oil and Bean cake.*—500,000 pieces per year, at 8 cents per piece. The freight will amount to $40,000.



3. *Bean.*—100,000 piculs per year, at 10 cents per picul. The freight will amount to $10,000.

4. *Wheat.*—300,000 piculs per year, at 10 cents per picul. The freight will amount to $30,000.

5. *Flour.*—200,000 piculs per year, at 10 cents per picul. The freight will amount to $20,000.

6. *Miscellaneous cereals and merchandise.*—Estimated at 500,000 piculs per year, at 10 cents per picul, it will bring $50,000.

7. *Reed bags for salt-packing.*—250,000 bales per year, at 10 cents per bale, the freight will be $25,000.

8. *Passenger traffic.*—Estimated at $12,000 per month, it will be $144,000 per year.

The grand total of the above eight items comes to $719,000, as annual income for the line.

Disbursements

Interest on construction cost calculated at 7% per annum, will be about $280,000.

Maintenance fee, at $1,000 per *li*, will be $240,000 annually.

The total of the above two items come to about $520,000. The surplus each year therefore should be about $190,000. This is of course a modest estimate based on present conditions, and when developments take place, the income will naturally increase.

Chinchow-Chaoyang Extension

The proposed extension of the Peking-Mukden line, by a branch to Ichow and Chaoyang-fu from Chinchow-fu, is like many other propositions in China, being held up for want of money. The route has recently been surveyed, and estimates of cost of construction made, but patience will have to be exhibited by the engineers of the Peking-Mukden line, until the new Parliament can settle down to business and see its way clear to vote the necessary expenditure.

Some time ago a preliminary was made from Chinchow-fu to the coal mines at San-l-chan, but nothing more was ever done as regards a line to the mines. Last spring, however, the Ministry of Communications asked for a line to be surveyed to connect Chaoyang-fu with the Peking-Mukden railway, and this work was recently undertaken by Mr. D. P. Ricketts, Engineer-in-chief of the Peking-Mukden line.

Part of the former route selected by Mr. Wilson was utilised and re-adjusted as far as Ta-Pan. The crossing of the Taling-ho was shifted further west, and the location carried along the north bank to Chaoyang-fu, after several lines had been surveyed.

The country here is very mountainous and difficult for economic railway construction.

There are several coal deposits in the region, and more might be found if the hills were properly prospected. There are indications of copper, iron and gold, and, near Chaoyang, a considerable vein of asbestos exists.

In connection with the proposed linking of Chaoyang-fu with Chinchow-fu, on the main line from Peking to Mukden, it is interesting to note that a separate proposal is being made by the Tutuhs of Fengtien and Jehol to connect Chaoyang-fu with Mukden and Jehol. If this line is undertaken it will start from Hsinmin-tun and run west by south to Ichow, on to Chaoyang and south-west to Jehol.

Already there is a proposal to lay a light line from Peking to Jehol. But why a light line? A railway along this route would seem to be a necessity, and this would give Jehol connection with the sea, via Tientsin.

One advantage of a connection between Peking, Jehol and Mukden would be that it would give a more direct route to Europe than that which is now followed, via Tientsin and the sea-coast line. It would also be an extension, as it were, of the Canton-Hankow-Peking trunk line.

Shanghai-Nanking Railway

The following figures of traffic returns (approximately) for the week ended March 22 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	50,512	11,470	61,942
1912....	48,486	5,420	53,906
Increase.	2,026	6,010	8,076
Decrease	—	—	—

For eleven weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	574,482	109,089	683,571
1912....	570,000	54,805	624,805
Increase.	4,482	54,284	58,766
Decrease	—	—	—

Week ended March 29:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	53,252	10,351	63,603
1912....	46,889	5,119	52,008
Increase.	5,363	5,232	11,595
Decrease	—	—	—

For twelve weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913	627,734	119,440	747,174
1912	616,889	59,924	676,813
Increase	10,845	59,516	70,361
Decrease	—	—	—

Week ended April 5:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	49,069	9,431	58,500
1912....	50,638	6,030	56,668
Increase.	—	3,401	1,832
Decrease	1,569	—	—

For thirteen weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	676,803	128,871	805,674
1912....	667,527	65,954	733,481
Increase.	9,276	62,917	72,193
Decrease	—	—	—

The week ended April 12:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	48,998	10,996	59,994
1912....	54,722	6,298	61,020
Increase.	—	4,698	—
Decrease	5,724	—	1,026

For fourteen weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	725,801	139,867	865,668
1912....	722,240	72,252	794,501
Increase.	3,552	67,615	71,167
Decrease	—	—	—

Russian Railway Advance to Urga

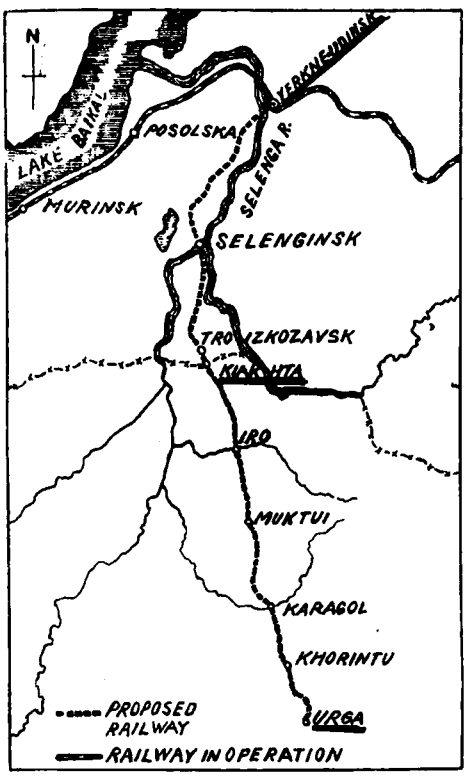
The recent announcement that the Russian Imperial Council had agreed to the building of the Russian States Railway from Yerkne-Udinsk to Kiakhta need cause no surprise. This line has been projected for a long time. It is the natural connection between Mongolia and the Siberian Railway, particularly with the future connection with Urga, the capital of Mongolia, in view.

Yerkne-Udinsk is, as will be seen from the sketch map, herewith, to the east of Lake Baikal, and practically due north of the important trading mart of Kiakhta, which is on the Mongolian frontier, and, in turn, almost due north of Urga.

The line will no doubt be built along the valley of the Selenga River, and then along the main road to Kiakhta.

This, ostensibly, is the furthest that Russians will go, but another line which will, of course, be under Russian dominance, is on the tapis to connect Urga and Kiakhta. An Agreement has been concluded, it is reported, between the Russian and the Mongolian Government, for this line. Nominally the Russians will build the line jointly with the Hutukutu, but in reality all authority will be in the hands of the Russians. One of the stipulations reported to be in the agreement is that the Urga Government will redeem the Railway after 50 years. The Russians have sent surveyors to locate this line, and the work will no doubt be carried out in conjunction with the Yerkne-Udinsk-Kiakhta project.

The following is a gist of the contract made between the Russians and the Living Buddha for the construction of the Urga-Kiachta Railway:—The line shall be built by the Russians; the construction shall begin within six months after the signature of the contract, and be accomplished in two years; the work of the construction shall be after the pattern of the Russian Siberian Railway. The line shall be under the control of the Russians for 50 years, after which period the Urga Government may buy back the line on condition that Urga pays twenty years' interest on the money spent for the construction; the Russians are allowed to operate the mines 50 li within the railway line, and besides the above the Russians shall have the privilege to construct all other lines at the vicinity or north of Urga, but the labourers required for the construction shall be one half Russians and one half Monogolians.



Yunnan-Kueilin Railway

The proposed Yunnan-Kueilin Railway is an important frontier line, and will be highly beneficial as it traverses an area extremely difficult for ordinary travel and transportation.

The line was projected last year, and the gentry and merchants of the three provinces, Yunnan, Kueichow, and Kwangsi, conferred for some time to devise means to carry out the project. At first they proposed that the funds should be raised by the five provinces, Yunnan, Kueichow, Kwangsi, Szechuan and Kwangtung. When the Sextuple Loan was first negotiated, they hoped that they would get an appropriation from the proceeds of the loan when it was concluded. But as the conclusion of the Big Loan seemed doubtful the Yunnan gentry and merchants have been actively urging the people of the three provinces to make a fresh start and make preparations for the realisation of the proposal in earnest, the funds to be raised by the original three provinces instead of the five, as Szechuan and Kwangtung have only a slight interest in the project on account of their geographical position.

A meeting was held by the representatives of the three provinces and they have decided to start a subscription campaign for the funds, and if there is any insufficiency of funds, they will float a foreign loan. They propose to elect Tsen Chun-hsuan (present Director-General of the Hukuang lines) as Director of the Company, and form a coalition with the Szechuan-Hankow-Canton Railway.

Kowloon-Canton Railway

The following estimates of expenditure for the year 1913 for the British Section of the Kowloon-Canton Railway, including the main line and the Fan Ling branch, were submitted to the Hongkong Legislative Council on April 10:—The proposed expenditure for this year, totals $430,068.30 and the savings on total estimate will be $345,881.13. The principal item of expenditure is one of $150,000, which is made up as follow:—Kowloon Station Building $141,402; gang huts $3,028; Taipo Market Station $4,750 and Sheung Shui Station $1,000. This item shows an excess, when added to the expenditure up to December 31, 1912, of $190,000, of $32,995 over the original estimate, which was $310,000. Under the heading of land, it is proposed to spend $5,000, but in this case the savings on the total estimate of $2,660,758.45, amounts to $412,208.99. The saving is due to the land on Lots 618 and 1,140 not being debited to railway account it being decided to acquire K.M.L.'s Nos. 3, 9, 74 and 75. No provision was made in estimate for resumption of land for Fan Ling Branch. Expenditure in 1913 is for strip of land for Manager's House. For C. and W. Rolling Stock it is proposed to spend $132,310.39. Originally only 8 coaches were provided. Since then eight more have been built, and eight are on order. Six more are required for the Fan Ling Branch, not included in the estimate. In connection with this there has been an excess expenditure of $235,939.18 over the original estimate of $309,540.00. Three additional locomotives for the main line, and one for the Fan Ling branch, not included in the estimate, call for an estimate of $57,101.40 increasing the excess of expenditure over estimate to $123,164.63. The total estimate for the railway is $14,060,374.71. To the end of 1912 the expenditure was $13,284,425.28 so that with the present year's estimate the amount spent on the railway will total $13,714,493.58 if the present year's estimate is not exceeded.

The Colonial Secretary in moving that $430,068.30 be advanced stated that substantial additions recently contemplated had brought the capital expenditure up to something like £1,350,000, the extra £250,000 to be raised by a special loan, a Bill providing for which was in the Orders of the Day. The additions to be made would be defrayed out of the loan, the most important being the terminal station on Kowloon Point.

The Lo-tung Railway.—The Ministry of Communications has appointed the Senior Clerk, Chen Yuen-tin, to proceed to Honan to take over charge of the Lo-tung Railway Company.

Tanyang-Ningkuo-fu Railway.—The Tanyang-Ningkuo-fu Railway Company, which was organized by Shanghai capitalists, opened its inauguration meeting recently and Gen. Hsu Kuo-ching was elected Honorary Managing Director. Chang Yao-ching was elected Manager and Kuan Hsiao Assistant Manager. Other officers will be elected at the next meeting, and detail plans to carry out the railway scheme will be formulated.

Nationalization of the Kiangsu Railway.—The attitude of the Kiangsu Railway Company is very favorable to the State-ownership of railways. This Company built the Shanghai-Kashing section of the Shanghai-Hangchow line, and has projected the Kiangpeh Railway, which is to run from Tsingkiangpu to Yangchow.

The negotiations with regard to the nationalization of the projected Tsingkiangpu-Yangchow line have been concluded.

The Kiangsu Railway Company called a meeting recently to consider the nationalization of the Shanghai-Kashing section. The shareholders were quite agreeable as to the handing over of this section to the Government, and they are now discussing the conditions and procedures in regard to the transfer. They will soon send representatives to Peking to confer with the Ministry of Communications on this subject.

Tientsin-Pukow Railway.—An improvement is effected in the service on the Southern section of the Tientsin-Pukow Railway, beginning on May 1, by the addition of a through daily train from Pukow to Tientsin, and *vice versa*, for all classes. A dinner service will be provided but not sleeping cars. The further announcement is made that no third class tickets will in future be issued for the bi-weekly express train except in the case of passengers' servants. The time table appears in our advertising columns.

MANCHURIA

South Manchuria Railway.—In order to guard against emergency, the South Manchuria Railway Co.'s Gas Works are installing a water gas producer ordered from Germany. The installation work will be finished about August.

The S. M. Railway traffic returns for the month of March give Y.2,555,232 and the daily average of Y.82,427, being an increase over the corresponding month of last year by Y.22,769, viz., almost 28%.

The S. M. R. Co., has issued a circular invitation to its shareholders calling upon them to pay in the fourth instalment of Y.40 per share by June 1st. This instalment will supply the Company with Y.4,000,000. When it is paid, the total share capital called up will amount to Y.16,000,000 leaving, only Y.4,000,000 more available for a further call.

The inconvenient location of the Locomotive Shed, Dairen, at the western end of the Dairen Station compound is being brought home to the Railway authorities more forcibly as the locomotives increase in number. Furthermore, the major portion of the buildings is of an improvised character. The Railway authorities have decided to remove it to the old site of the Railway Workshops at the west of the Electric Power House. Work will be commenced in the current year.

Kirin-Changchun Railway.—The Kirin-Changchun Railway proposes to use coal mined from a colliery at Shihlingtzu about 6 miles from Yingchengtzu Station. The management intends to lay a light rail line over the distance, and has finished the surveys. Work was to be started during March.

Light Railway Between Mukden and Jehol.—The proposed construction of the Mukden-Jehol light railway has been approved by the Interprovincial Congress, Peking. An appropriation of $5,000,000 is to be disbursed from the central treasury. Work will be started shortly.

Proposed Branch Line to Kuangning.—The Peking-Mukden Line of the Chinese Government Railways propose to construct a branch line deviating from Chingtatitzu to Kuangning. Some engineers are engaged in the surveys.

SIAM

The Southern Railway.—Railhead on the Siamese Southern Railway has reached Koh Lak. It was expected that trains would be running to the latter place some time in April.

Railway Material.—The m. s. *Jutlandia*, which arrived at Bangkok on March 13, had 3,400 tons of cargo for Bangkok, including transhipment cargo. There were 500 tons of railway materials for Bangkok, and also 220 tons of bridgework for Chumphon, 46 tons of waggon work for Bandon, and 32 tons of waggon work for Singora.

JAPAN

Tokyo Central Railway Station

The Central Railway Station now under construction at Eiraku-cho, Kojimachi, Tokyo, will when completed rob Shimbashi of the honour of being the "front door" of the Japanese capital. The Director of the construction branch of the Japanese Railway Board, Mr. Takeyoro Okada, hopes to have the station ready for general use in June, 1914. Shimbashi will then become merely the freight depot of the Tokaido line.

The following interesting particulars in reference to the new station are taken from the *Japan Times*:—

The site allotted for the purpose is a broad piece of ground facing on the East the moat, bounded in the South and the North by the Kajibashi and the Gofukubashi streets, and on the West, the Yaesu-cho. 65,300 tsubo is the rough calculation of the total area of the grounds. The main building of the station and platforms will occupy the center of this space and the rest of the grounds will have some smaller additional buildings.

There will be eight platforms, all built on the elevated line. Of them two will be reserved for the electric line, and four will be devoted to the Tokaido line, while the other two will be placed at the disposal of the Central Eastern line. The main building will have four entrances in the front, of which one in the center will be used only by the Imperial personages and their suites. Of the remaining three the Southern will be the inlet for the passengers and the Northern the exit for the same while the one adjacent to the Imperial entrance will be the passage for the electric car passengers.

As for the transportation of the passengers' luggage, a special accommodation will be made, so that they can be conveyed from the luggage office on the first floor to the trains on the elevated line or *vice versa*. A post office will be set up at the Western corner of the lot and will be designated for the transaction of metropolitan mail matters which will be sent to various parts of the country.

The foundation of the station is hardened by concrete and the building is constructed of steel. Brick and stone are applied to cover the steel framework and the floor is built of ferro-concrete so that it is fire-proof. The roof is constructed of iron girders and covered by slate and copper plates. The building is 1,104 feet long and from 66 to 132 feet wide, and covers an area of 2,341 tsubo. The height of the building is some 54 feet above the ground in the third-story part and 124 feet in the towers. The first floor will be used as the station. The Southern part of the first floor will be partitioned into many sections which include an octagonal chamber of 354 tsubo allotted for the examination of tickets, two booking offices of 37 tsubo, a first class men passengers' waiting room of 57 tsubo, a first class women passengers' waiting room of 41 tsubo, a second class passengers' waiting room of 79 tsubo, a third class passengers' waiting room of 110 tsubo, two luggage offices of 25 tsubo, a luggage delivery office of 124 tsubo, and two dining rooms of 66 tsubo. A separate building of 95 tsubo will be built just behind and is intended for lavatories for the first, the second and the third class passengers, as well as public telegraph and telephone rooms. In the Northern part there will be made an octagonal chamber of 315 tsubo intended for the examination of tickets of the alighting passengers, a waiting room of 64 tsubo, a women's waiting room of 63 tsubo, a women's lavatory of 9 tsubo, a luggage delivery office of 122 tsubo, two luggage offices of 25 tsubo. A separate building will also be built on this side just behind these rooms. The central part will be reserved for use of the Imperial family, and will cover an area of 275 tsubo, which is divided into a resting hall of 27 tsubo, an adjoining room of 7 tsubo, a hall of 30 tsubo, two waiting rooms of 61 tsubo, an entrance and an open porch of 36 tsubo, and a passage leading to the plaform of 114 tsubo.

There is a basement, the Southern end of which will be used as cooking quarters, a goods depository and a general washing place; and the Northern end as an engine room equipped with a steam heating system. The rest will be occupied by a large dining hall where the Railway people can meet. All the food cooked here will be conveyed to the first floor and upwards by elevators.

The second and the third floors will be used as business quarters and dining halls. As for stairways, those leading to the third floor from the first are seven, of which two are situated near the central part. There is only one stairway which leads to the second floor from the first and two which lead from the second floor to the third. Throughout the building electricity will be laid on.

In view of the completion of the station the price of land in the neighborhood has risen considerably. The city has a plan to construct a road of 240 feet wide before the station and a road of 90 feet wide extending from the City Office to the Gofukubashi. It also expects to reconstruct the Kajibashi and the Gofukubashi, the two most important bridges connecting the new station and the bustling business quarters. The bridges, when completed, will give a beautiful effect and may equal representative bridges in the West.

Railway Returns.—The total value of returns from the Government's railway business for the fiscal year ending with March 31st was 105,318,027 yen with an increase of 7,537,353 yen against the previous fiscal year. The average working mileage was 5,130 miles. According to the authorities concerned, when the revenue from miscellaneous and some other sources is added, the grand total will exceed by 5,000,000 yen or 6,000,000 yen against the estimate of 104,700,000 yen for the said fiscal year and by 9,000,000 yen or 10,000,000 yen against the budget for the current fiscal year, and the net profit will increase after all by about 7,000,000 yen against 10,107,000 yen as estimated for the last year.

Investment in Light Railways.—Since the existing Light Railway Law was enacted, 219 companies have been established for the construction of light railways, the total length reaching 3,033 miles and the capital invested therein amounting to 147,080,000 yen in all. The figures include the five companies sanctioned during the month of March, with the total amount of capital of 5,750,000 yen.

Electrification of Short Railways.—The electrification of the shorter railways seems to be proceeding apace in all countries, and the Japanese Railway Board is not going to be behind in the fashion. At Yaguchi, near Kawasaki, a large power-house is already completed and when transformers, &c., are ready, electric trains are to be run between Yokohama and Tokyo at much more frequent intervals than the present train service provides.

New Station at Osaka.—At an expenditure of about Y.9,000,000 the Japanese Railway Board is now reconstructing the Osaka station. The chief points in the plan for reconstruction are the separation of the passenger and goods traffic and the improvement of the accommodation for passenger traffic. Though the work will not probably progess as quickly as at first expected, owing to lack of funds, it will be completed by 1917 or 1918 at the latest.

State Railways Debt Heavy.—The outstanding amount of public loans raised on account of the State railways is given as 591,270,750 yen, the figures being composed of 456,195,000 yen of the railway nationalisation loan, 61,151,450 of the railway bonds, 25,378,750 of the railway undertakings loan, 20,392,150 of of the railway loan adjustment loan, 21,901,100 of the consolidation bonds, and 6,251,300 of the

Mr. Arima, manager of the Kobe branch of the Osaka Shosen Kaisha is on a tour of inspection of the shipping business in Europe and America.

Mr. Paul Schmitz, an engineer from Dusseldorf recently arrived in Tokyo to take up a position with the Nippon Steel Pipe Manufacturing Company in which Messrs. Asano and Shiraishi are interested.

Mr. A. J. Fippard, engineer of the Hankow Waterworks and Chinese city electric light works, has left for England via Siberia in company with Mrs. Fippard on a short furlough

Mr. W. P. G. Taggart, manager of the Cebu branch of the Chartered Bank, has been transferred to Manila. Mr. H. T. Stapleton will take charge at Cebu.

A number of changes are pending in the Indoor staff of the Chinese Maritime Customs. Mr. V. Dent has resigned from the service; Mr. C. Thorne, from home leave, has been appointed to Amoy: Mr. J. C. Johnston goes to Ningpo: and Mr Cupelli to Mengtze.

Mr. Yamaguchi of the Bank of Japan has gone to America to investigate the banking system in that country.

Mr. H. Schlichting has resigned from the chairmanship of the Hankow German Municipal Council on account of ill-health and has been succeeded by Mr. E. Mirow.

Mr. N. F. Perkins, U. S. Vice-Consul General at Shanghai, has gone home on six months' leave of absence.

Mr. E. Tollefsen, district portmaster at the Shanghai Chinese Post Office, handed over charge to Mr. F. P. Donovan on March 31.

The death is announced of Dr. Lee of the audit department, Peking-Moukden Railway, from apoplexy. He was an American-educated Chinese of high attainments, and was popular with all classes of foreigners and his fellow-countrymen.

Mr. A. Pernotte, the manager of the Tientsin branch of the Banque de l'Indo-Chine, has been decorated by the Chinese Government with the order of The "Excellent Corn", for services rendered.

Mr. F. W. Carpenter, the American Minister Plenipotentiary to Siam, was one of the last appointments made by Mr. Taft. He received no news of the confirmation of his appointment by the Senate, and consequently thought, that it automatically expired on March 3. Mr. Carpenter turned his office over to his *Chargé d'Affaires*, and commenced the homeward journey. When he arrived at Singapore, however, he found that the confirmation of this appointment had been received, and he is, therefore, back in Bangkok.

Mr. Lester Maynard, American Consul at Harbin, has been transferred to Amoy, and been succeeded by Mr. S. P. Warner.

Mr. A. L. Fernie has arrived at Chefoo from Shanghai to relieve Mr. R. Rodger of Messrs. Butterfield and Swire, who is shortly going on 'home' leave.

Mr. A. D. Brent has succeeded Mr. A. Henchman in the Dalny agency of Hongkong and Shanghai Banking Corporatio.

Mr. C. H. Godfrey, Engineer and Surveyor to the Public Works Department of the Shanghai Municipal Council, and Mrs. Godfrey and family left for home on March 29.

Mr. J. D. Smart has left Shanghai and gone to Manila, where he will be agent of the Hongkong and Shanghai Bank.

The death is announced of Mr. Louis Bridel, Professor of the Tokio Imperial University. Born in Switzerland, deceased went to Japan about thirteen years ago, being appointed Professor of the Law Faculty of the University. He was greatly respected by the students.

Mr. Niko P. Miliaressy, the well-known civil engineer of Tokyo and corresponding member of the Royal Geographical Society of Greece, has been elected a member of the Imperial Geographical Society of Japan.

Messrs. William S. Fleming and James B. Davies have gone into partnership for the general practice of law at Shanghai.

Mr. Frank W. Hadley, U. S. Vice-Consul General and Mixed Court Assessor at Shanghai, has resigned from the Consular service to engage in business in China.

The Chinese Government Railways

Tientsin-Pukow Line

In addition to the bi-weekly express and daily local service, which shall continue unaltered, a daily direct through service from Pukow to Tientsin and *vice versa*, will be inaugurated from the 1st of May, 1913, with first, second and third class passenger cars but no sleeping cars attached. Dinner service will be provided.

From same date booking for third class passengers on express trains will be discontinued, but a first class passenger may book not more than one-third class servant ticket for which accommodation will be provided.

TIME TABLE

UP TRAIN.

STATIONS		Mon. & Fri. Express	Daily Through Mail Service
Pukow	Dep.	9.00	9.40
Hsuchowfu ..	„	17.44	19.44
Tsinanfu	„	2.30 Tues. & Sat.	7.00 next day
Techow	„	5.31	9.55
Tientsin Cen..	Arr.	10.43	15.35
„ „	Dep.	10.53	16.05
Tientsin East.	Arr.	11.03	16.15

DOWN TRAIN.

STATIONS		Wed. & Sat. Express	Daily Through Mail Service
Tientsin East.	Dep.	13.00	9.40
Tientsin Cent.	Arr.	13.10	9.50
„ „	Dep.	13.20	10.20
Tsinanfu	„	21.54	19.30
Hsuchowfu ..	„	6.41 Thurs. & Sat.	7.05 next day
Nanhsuchow..	„	pass	9.03
Pukow	Arr.	15.15	16.41

For further particulars apply to the Traffic Manager.

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THE ELECTRICAL INDUSTRY IN JAPAN

Views of a German Expert

We find in the *Electrical Review* an interesting article, translated from the *Elektrotechnische Zeitschrift* on the electrical industry in Japan. The writer, Mr. Ludwig W. Schmidt, points out that the great expansion of the electric motor in Japan is not only due to the advantages of electrical energy as a distributor of power in factories, but also largely to the surprisingly rapid development of Japanese industries, which has succeeded in trebling the number of factories in the past decade; and the predominance of this form of power now seems assured for factory working. In order to prevent misapprehension, however, Mr. Schmidt should have pointed out that very many of these factories are very small concerns indeed. He goes on to say that where electric tramways or central stations exist the energy for the driving of the motors is usually supplied from stations, this being of special advantage in the towns, where the lighting and tramway load permits of a fairly cheap supply being afforded to the users of power. In many cases, however, the factory owners have installed their own generating plant, especially in the textile industry, the shipyards, metal refining works, and the mines. This fact is explained, in the instance of the mines, by the great distance which separates most of them from the real centres of industry, and the metal refineries have been compelled to establish individual plant mostly for the same reason.

The development in the use of electric power has been accompanied by the simultaneous extension of electric lighting. From the beginning of 1900 to 1910 the number of lighting companies has risen from 49 to 122; the buildings electrically lighted have increased from 47,701 in 1901 to over 600,000 in 1910; and the number of private lamps in use has advanced from 300,000 to 1,900,000, whilst the street lighting lamps have grown from 6,400 to 59,300 in the same period of years. Many of the lighting companies are also owners of tramways, and their total net receipts have increased nine-fold in the 10 years ended with 1910. Not only so, but the ratio of net profits to expenditure has constantly improved. It formerly stood at 3 to 1, but at present almost 50 per cent. of the total profits represents net profits. The electric tramways have found a specially favoured sphere of activity. As in almost all new industrial countries, so in Japan have the manufacturers begun to locate themselves as near to the coast as possible, and in this way a number of densely-populated industrial centres has arisen, where the transport of the workers to and from their place of employment has become a similar problem to that in New York, Berlin, and London. During the 10 years the number of towns provided with electric tramways has advanced from 11 to 40, the length of line from 72 to 692 miles, and the passengers from 46,477,000 in 1901 to 395,666,000 in 1911, and the invested capital from £1,500,000 to £18,700,000.

The Position of Japanese Manufacturing Firms

The development in all branches of the consumption of electricity, proceeds the writer, has naturally had a favourable influence on the sale of electrical manufactures, and the electrical trade of Japan for this reason has made a large advance since the beginning of the century. Until nearly the end of the past century, by far the greatest part of the turnover was effected by the importers; but during the decade under consideration, the situation has become more favourable for the native manufacturing works. The history of the domestic industry is full of reactions and of successes only obtained after great trouble, and even in the present century the progress made by the native works has frequently been accompanied by failures. In particular it has turned out that many of the large works were equipped with inadequate capital, and this had led to financial losses in many cases, as it was impossible to bring the works quickly enough to the capacity for which they were designed. Various works which were projected with foreign capital either had to be abandoned before they were actually established, or they could only be successfully carried out after great difficulties had been overcome. Nevertheless, the industry has managed to reach a sound basis to some extent in the course of years, and it can now be regarded as having attained an assured position, although many works have not yet quite fully surmounted their juvenile defects.

The local demand has been greater than the capacity in many cases, and extensions had to be undertaken without sufficient capital being available. But the greatest want has been the lack of good and trained workers. It is true that the Japanese dispatched engineers to Germany, England, and the United States in order to study the latest methods. As a result of the knowledge thereby gained no money has been spared in introducing the newest types of machinery, but the Japanese have been unable to impart the theoretical knowledge to their workmen. This difficulty has been specially noticed in the cable works, of which a number have arisen in recent years. In general, the cable factories work under tolerably favourable conditions, as they are usually in close relations with a large copper mine from which raw material is obtained at the lowest prices, and they are also protected by a high import duty. Nevertheless, they are not able to shake off foreign competition because the quality of the imported cables is generally better than that of the native product. The reason for this occurrence, according to a British Consular report, lies in the lack of sufficiently trained chemists in regard to rubber. Certain of the owner of cable factories have therefore adopted the course of obtaining the services of qualified foreign workers, but the latter are hampered by the fact that they are unable to make themselves sufficiently understood by the Japanese workers. While the imports of telegraph cables are, as will be seen, irregular, the imports of insulated wires show a constant advance, and the requirements have increased tenfold since the beginning of the century. The accompanying table illustrates the general course of the import trade during the past 14 years:—

Imports of Electrical Machinery, Cables, and Insulated Wires

	Machinery.	*Telegraph cables.*	*Insulated wires.*
1898 ..	£69,700	£18,500	£32,100
1899 ..	45,000	19,400	14,500
1900 ..	97,600	104,900	38,100
1901 ..	97,900	49,800	42,900
1902 ..	132,300	8,500	67,400
1903 ..	111,400	33,200	33,900
1904 ..	165,200	103,700	75,900
1905 ..	301,500	256,900	78,700
1906 ..	181,100	20,800	95,700
1907 ..	254,300	133,300	112,900
1908 ..	372,100	42,000	144,700
1909 ..	300,000	35,900	151,700
1910 ..	219,200	159,500	163,700
1911 ..	571,100	37,700	370,000

The manufacture of lamps and similar articles has largely increased. But although the domestic industry is at an advantage in relation to foreign competition through the import duties, the imports have not experienced any decline, and the business undertaken by Germany in this direction has been doubled in the past three years. Several of the large electricity companies have adopted the policy of importing certain parts from Europe or the United States and assembling them in Japan. This practice probably explains the fluctuations in certain articles of import in recent years. In conclusion, the author gives the following tables showing the respective exports to Japan of Germany, Great Britain, and the United States in recent years:—

German Electrical Exports to Japan.

	1908.	1909.	1910.
Dynamos	£67,600	£58,550	£56,400
Armatures	7,150	1,650	4,800
Accumulators	2,400	2,400	20,300
Cables	94,150	28,500	163,950
Arclamps	600	400	600
Searchlights	250	1,150	10,550
Glow lamps	10,800	10,650	25,600
Telegraph apparatus	3,500	600	3,400
Apparatus for power transmission	37,300	20,500	21,850
Apparatus for medical purposes	2,400	3,900	2,750
Measuring apparatus	5,850	14,550	21,300
Primary batteries	200	50	100
Heating apparatus, &c.	400	150	—
Insulating materials	—	—	50
Total	£232,600	£143,050	£331,650

British Electrical Exports to Japan

	1908.	1909.	1910.	1911.
Rubber-insulated wires	£32,310	£25,550	£48,210	£19,120
Other insulated wires	28,895	53,615	39,690	49,965
Telegraph and telephone wire	41,050	64,515	252,205	100,500
Telegraph and telephone apparatus	4,050	3,030	3,245	1,800
Carbons	Not separately recorded			
Lamps	Not separately recorded			
Batteries	5,650	7,495	7,165	4,460
Unenumerated	12,565	18,155	24,090	24,145
Total	£124,520	£172,360	£374,605	£199,990

United States Electrical Exports to Japan

	1908.	1909.	1910.	1911.
Electrical apparatus, including telegraph and telephone materials	£88,960	£60,985	£67,780	£181,610
Machines	299,220	235,040	142,960	261,425
Total	£388,180	£296,025	£210,740	£443,035

UNIFICATION OF RAILWAY ACCOUNTS

In connection with the unification of railway accounts, described in an article in the Far Eastern Review last month, and written by Dr. C. C. Wang, it is interesting to note that Dr. Wang has gone to Europe in company with Mr. Tsang Kuang-hsiang, Inspector General of Railways, to study the various systems of accounting in vogue in various countries. They will be away for a few months, and their investigations should lead to great benefits to China in future. Dr. Wang has his heart and soul in this work, and his mission abroad is not likely to be as resultless as many other missions which China has from time to time sent abroad. Dr. Wang has gone to learn something, and to put into practice what he has learned when he returns.

SINO-JAPANESE COMMERCIAL TRUST CO.

A Reuter telegram from Tokyo dated May 22 was as follows:—The prospectus of the Sino-Japanese Commercial Trust Company has been issued. The capital of the Company is Y. 5,000,000, half to be subscribed by Japanese and half by Chinese, and its object is to capitalize railways and mines and act as agents for Japanese capitalists and Chinese merchants.

The shareholders include the Mitsui Bussan Company, the Mitsu Bishi Company, the Industrial Bank of Japan, the Yasuda Bank, the Yokohoma Specie Bank, Bank of Formosa, Fifteenth Bank, Hundredth Bank, and Messrs. K. Okura & Co. The head office of the Company will be in Shanghai, and the chief branch in Tokyo.

It is stated that all business people connected with the Kuomintang are joining the Company and it is anticipated that Dr. Sun Yat-sen and Baron Shibusawa will be its Presidents.

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FAR EASTERN RAILWAYS

CHINA

Projected Line in Kwangtung:—For some time there have been discussions as to the necessity of joining the populous town of Tsang Shing on the East River with the main line between Canton and Kowloon. It will attach itself to the main line at Shek Lung. It will not be a long line, only about forty li, or say fourteen miles. On the other hand it will pass through two or three biggish towns. The cost of building the line is estimated at about four hundred thousand dollars. The promoters affirm that the way is level and that land can be purchased cheaply. The same Company have also suggested others, joining the towns in the district north of the East River. About three hundred thousand dollars have already been subscribed. The future of this branch line may, therefore, be assumed to be secure.

Kirin-Changchun Railway:—The traffic-returns of the Kirin-Changchun Railway for the first three months of this year, according to the report received by the Mukden government, are as follow:—

Receipts.	Jan.	Feb.	Mar.
Passenger	35,612	22,107	34,750
Goods	30,950	17,689	23,598
Goods (by monthly contract)	6,331	1,878	6,294
Sundry	160	325	1,219
Total	73,053	41,990	65,861

The Ministry of Communications has received a despatch from the Kirin-Changchun Railway authorities urging the prolongation of the line to the bank of the Sungari River. It says in part that the line as it now stands is only 200 li and the biggest towns on the line are Kirin and Changchun, which, although they are trading marts, yet do not possess the qualities of such extensive development as is possible with a port accessible both by land and water routes. If the railway is prolonged to the bank of the Sungari River then the railway will be connected with the water route and there will be great developments possible because of the increased facilities. Moreover, the extension will be only about fifty li, and, as there are no engineering difficulties $1,000,000 will be sufficient. After completion the receipts of the line will be materially increased. The Minister of Communications has approved this proposal and sanctioned the use of the receipts of the railway as construction funds.

Proposed Changsan-Yusan Railway.—The proposal of T'ang Shou-hsien, Managing Director of the Chekiang Railway, to construct the short line connecting Changsan, in Chekiang, and Yusan, in Kiangsi, has received enthusiastic response, and some definite action has been taken toward the carrying out of the project. This line, short though it is, will be a connecting link, greatly needed, between the grand routes of the two provinces to Anhui and northward on the one hand, and to Fukien and Kwangtung on the other hand.

T'ang Shou-hsien, about a month ago, proceeded to Nanchang to confer with Tutuh Li about this project. While there, he and the Kiangsi authorities drew up an agreement, with plans and estimates for the construction of the line. These were sent to the Kiangsi Provincial Assembly to be deliberated upon. The Assembly was very favorable to the project and replied that of the $1,400,000 necessary for the line, the provincial Governments of Kiangsi and Chekiang would make an advance of $400,000, and, as for the rest, Kiangsi should undertake to subscribe $500,000 and Chekiang another $500,000. The Assembly also remarked in the reply that since this line was short, and construction cost would be comparatively low, it could be built in a short time, and as it was situated in a very good position, they thought the railway would surely prove to be a profitable investment. They requested the Tutuh to send a commissioner to Hangchow to confer with Mr. T'ang Shou-hsien in order to expedite matters. Tutuh Li therefore sent Mr. Hu Yi, ex-Chief of the Communications Bureau of Kiangsi, to Hangchow.

Yusan is in the prefecture of Kwangsin-fu. A merchant from the Kwangsin-fu city has volunteered to raise subscriptions to the amount of $500,000, and has received the approval of the Tutuh.

Canton-Hankow Railway.—The Associate Director of the Canton-Hankow and Hankow-Szechuan Railways, Dr. Jeme Tien-yew, arrived at Hankow early in May to arrange for the commencement of construction work. He stated that money was available in the Hongkong & Shanghai Bank for the construction of the British section, and that he expected work to begin immediately. He stated further that the Administration had now appointed the following Accountants:—

For the British section (Wuchang to Yichang, on the Hunan-Kwangtung border) Mr. C. C. Connell, late of the Shanghai-Nanking railway.

For the German section (Hankow or Kwangshui to Ichang) Mr. Schidt.

For the American section (beyond Ichang) Mr. Plant.

In addition the appointment of Mr. Cyril H. Bell, A.C.A., as auditor of the British section, had been confirmed.

The first work to be undertaken, will be to complete the purchase of the land, then to make the earthwork. The only material that has been ordered up to the present is the telegraphic material.

Yencheng-Chowkiakow Branch Line.—Chowkiakow is one of the most famous marts in Central China, and in the past it has been the sole distributing centre of Honan and adjoining Provinces. It possesses the peculiar advantage of situation, as it is accessible by the Hwa River, and merchandise from Kiangsu and Anhui may be shipped by the waterway up to Chowkiakow. It has played an important part in the commercial history of Honan, but since the advent of the iron road, what was formerly regarded as a lively port has been relegated to the background.

Nevertheless, its merits so far as waterway transportation is concerned are entitled to serious consideration. The Chowkiakow Chamber of Commerce have awakened to the fact that they are losing their former prestige and they must do something if they do not want their town to be looked upon as of no consequence. The best solution is to effect a junction with the Kin-Han Railaway, which will not only restore its former prosperity but will materially increase its importance, as the bulk of goods bound for the Eastern Provinces will be diverted into its direction instead of going by the circuitous route via the Yangtse River. A petition has been forwarded to the Board of Communications by the local Chamber of Commerce.

It may be said here that several years ago, when the Kin-Han Railway was in process of construction, the engineer in charge of the Honan section had proposed the building of a branch line from Yencheng to Chowkiakow, the distance being about 120 li, but somehow the matter was dropped. The Board of Communications now realises the importance of this branch line, and has already sent three engineers of the Kin-Han Railway to make a preliminary survey of the line.

Chinchowfu-Taonan-fu Railway.—At the instance of the Mongolia-Tibet Communications Company, the Ministry of Communications has appointed Mr. Chen Tz-min, Civil Engineer, graduated from America, to take charge of the surveying work of the projected Chinchow-fu-Taonan-fu Railway. He has reached Mukden, and after conferring with Chen Chao-sing, Director of the Communications Company, set out for his survey, being accompanied by several assistants.

Shantung Railway Dividend:—The dividend of the Shantung Railway will be 7¼ per cent. for the last year: the advance from 6 to 7¼ per cent. is a consequence of the rise of the silver price.

The Lotung Railway.—The Tutuh of Honan, Mr. Chang Tseng-fong has reported to the Government that the shareholders of the Lotung Railway are willing to have their line constructed together with the Hailan Railway. The Government has referred the matter to the Ministry of Communications for decision. Another report says that the shareholders are not willing to hand over the line to the Government.

Mongolia and Tibet Communications Co.—The Mongolia and Tibet Communications Company, which was formed with the object of developing means of communication to thereby foster industrial and commercial activities, has established branches at important cities on the Chinese frontier. The Head Office is in Peking. Recently the Head Office received a letter from its Mukden Branch setting forth the proposal to build a light railway from Kinchow to Taoman. The Head Office has given its approval of the project, and they are now taking steps to carry it out.

Fang-chang Railway.—A merchant by the name of Zie Min has petitioned the Ministry of Communications for permission to build a railway from Chowkotien, of Fangsan, to Changkowo. He stated that he had raised the necessary funds, and asked that the Ministry send an official to make investigations.

The Szechuan Railway.—The Ministry of Communications have issued an order commissioning Mr. Feng Chu-pei to proceed to Ichang to arrange for the taking over of the Szechuan Railway.

Bridge Contract.— The Shan-hai-kwan Bridge Works (belonging to the Peking-Mukden Railway) was recently given the contract for building the superstructure of the bridge to cross the river at Tatung-fu, on the extension of the Railway line from Kalgan. The contractors are to build 20 spans of 100 feet each, the price per span being £512. The first four spans are to be delivered in August and the remainder at four spans per month. The spans will be standard, and may go in one bridge or another.

Railway Officials.—When the Pienlo Railway was amalgamated with the Hailan Trunk Line, it was placed under the control of Mr. S. C. Sze, the Director-General of the Line. The Managing-Director of the Pienlo Railway has now been transferred to become the Director on the Kin-han Railway. It is proposed that Mr Lu Hsueh-meng be appointed the Managing-Director of the Pienlo Railway.

The Chefoo-Weihsien Railway.—The Surveying Corps have finished the surveying of the line from Chefoo to Weihsien, a distance of 200 miles. The estimate made by the Ministry of Communications of the cost of construction is Tls. 70,000 per mile, and the whole line will require about Tls. 15,000,000. Minister Chu decided upon two methods of raising the funds:—(1) to subscribe the capital among the merchants, (2) to float a foreign loan to meet any insufficiency.

Shanghai-Nanking Railway

The following figures of traffic returns (approximately) for the week ended April 19 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	52,005	11,977	63,982
1912....	52,715	6,448	59,163
Increase.	—	5,529	4,819
Decrease	710	—	—

For fifteen weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	777,860	151,844	929,650
1912....	774,964	78,700	853,664
Increase.	2,842	73,144	75,986
Decrease	—	—	—

Week ended April 26:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	43,716	10,119	53,875
1912....	40,959	7,066	54,025
Increase.	—	3,053	—
Decrease	3,243	—	190

For sixteen weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	821,522	161,963	983,485
1912....	821,923	85,766	907,689
Increase	—	76,197	75,796
Decrease	401	—	—

Week ended May 3:—

For the week.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	44,446	10,359	54,805
1912....	46,091	6,262	52,353
Increase.	—	4,097	2,452
Decrease	1,645	—	—

For seventeen weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	865,068	172,322	1,038,290
1912....	868,014	92,028	960,042
Increase.	—	80,294	78,248
Decrease	2,046	—	—

Week ended May 10:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	52,626	9,302	61,928
1912....	47,414	6,751	54,195
Increase.	5,182	2,551	7,733
Decrease	—	—	—

For eighteen weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	918,594	181,624	1,100,218
1912....	915,458	98,779	1,014,237
Increase.	3,136	82,845	85,981
Decrease	—	—	—

JAPAN

Wakayama Light Railway.—The Japanese Railway Board gave a charter on April 1 to the Santo Light Railway Company, promoted by Mr. Taro Kakiuchi and eleven others. The light railway will connect Nakanoshima, with Nishi Santo village, Wakayamaken, extending six miles with a gauge of 3 feet and 6 inches. The capital of the company is 250,000 yen.

Motor Cars for Railway Use.—The Japanese railway authorities have started, it is said, an investigation with a view to employing electric locomotives and motor cars in some sections of State railway lines, in order to increase the carrying capacity of trains and to save expenditure.

Keiwo Electric Railway.—The newly constructed line of the Keiwo (Tokyo-Hachiwoji) Electric Railway Co. has been opened to business.

Narita Railway.—The Narita Railway Company held its semi-annual general meeting, recently, at which a dividend of 6.5 per cent. was declared for the latter half of the year 1912-13.

The Fuchoku Railway.—The last section of the Fuchoku Railway, Japan, was opened on April 1. This line runs northwards along the Japan Sea coast from Toyama, the northern terminus of the Hokuroku line, to Naoyetsu, near Niigata, connecting with the Hokuyetsu and Shin-Yetsu lines. Construction was started from both ends in March, 1907, and the section between Toyama and Uwotsu (17 miles) was completed in November, 1908; the section between Uwotsu and Tomari (14.7 miles) in April, 1910; the section between Naoyetsu and Nadate (9 miles) in July, 1911; the section between Tomari and Aomi (14 miles), and the section between Nadate and Itoigawa (16 miles) in December last; and the section between Aomi and Itoigawa (4 miles) has just been completed. The total length of the Fuchoku line is just over 76 miles, on which 21 tunnels have been cut, 150 river bridges and 35 minor bridges have been constructed, and there are twenty stations. The total cost of the line amounted to about Y.12,707,020. The Koshirazu tunnel, the largest on this line, is 4,956 feet long and the bridge across the Kurobe river, the longest on the line, is 2,468 feet. The opening of the service on the whole line of the Fuchogu Railway will largely revolutionise traffic between Echigo and neighborhood and Tokyo and Osaka. By the opening of this service the distance by rail between Niigata and Osaka has been shortened by 24 miles, and the distance between Tokyo and Toyama by 180 miles. The direct service also saves a great deal of time on the journey between Osaka and Niigata and between Tokyo and Toyama.

Osaka Harbor Railway Connection.—During the second Katsura Ministry the Japanese Government planned a rail connection between Osaka harbor and the trunk line, but owing to a divergence of views between the Communications Department and the Army the matter was shelved. Lately the question has been revived, a new committee being appointed by the Osaka Municipal authorities to consider measures for utilising the Osaka harbor works for commercial purposes. Two harbor lines are proposed—one from Umeda, known as the northern line, and the other from Namba, known as the southern line, and the Osaka Harbor Committee has been appointed to investigate and report upon the merits of the two lines. Baron Goto, Minister of Communications in the Katsura Cabinet, preferred the southern line and the Military authorities the northern line. The Committee just appointed favor the northern line, and will address a memorial to the Government to this effect. This movement is backed by Colonel Shiki, Chief of the Staff of the Osaka Army Division, and is regarded favorably by the Osaka Chamber of Commerce. It is believed that the construction of the line will soon be undertaken.

Railway Expenditure in 1912-13.—The estimate of expenditure for the construction of repairing work of Japan State railways for the fiscal year 1912-13 was 68,997,964 yen in all, of which 47,671,104 yen was really spent and the rest about 14,000,000 yen is to be carried forward to the current fiscal year 1913-14.

Hanshin Electric Railways May Increase.—It is reported that the Hanshin (Osaka-Kobe) Railway Company intends to increase its capital to 14,000,000 yen or double the present amount, for the completion of the proposed lines and some improvement works.

The company held a general meeting of its shareholders recently and declared a dividend of 13 per cent. for the latter half of the fiscal year 1912-13.

Railway Retrenchment in Japan.—Mr. Tokonami, President of the Japanese Imperial Railway Board, is busily engaged in the preparation for the proposed reform in the railway circles. The *Asahi* is informed by members of the staff engaged in these preparations, that several sections of the Board and of local Bureaus will be abolished or amalgamated with others, and the number of the officials may be reduced by 30 or 40 per cent. in the Board (Head Office) and by 10 or 15 per cent. in the local Bureaus (Branch Offices). In the Head Office, there are 16 officials of *Chokunin* rank, 120 of *Sonin* rank and 1,569 of *Hannin* rank and below, the total amount of their salaries being Y.711,298 a year. In the five local Bureaus, there are 5 officials of *Chokunin*, 342 of *Sonin*, and 5,970 of *Hannin* rank (officials below the *Hannin* will not be reduced), the total amount of their salaries being Y.3,762.456 a year. If, therefore, the officials in the Head Office are reduced 35 per cent., 594 will be dismissed, saving Y.248,954 in salaries. If local Bureau officials should be dismissed by 12 per cent., 758 will be relieved of their duties, saving Y.452,000 in salaries; or a total dismissal of 1,352, and an annual economy of over Y.700,000. In the event of this decrease being carried into effect, travelling expenses and other items will also be economised, the total retrenchment being estimated at Y1,000,000.

Underground Railway in Tokyo.—A proposal was made some time ago in the Tokyo Municipal Assembly for construction of two underground railways, one running between Iida-machi in Kojimachi-ku and Mejiro in Koishikawa-ku, under the control of the Johoku Electric Railway Company, with a capital of 3,500,000 *yen*, and the other leading from Takanawa Minami-cho, Shiba-ku, to Chayacho, Asaskusa-ku, *via* Ginza, Sudacho and Ueno, under the control of the Tokyo Underground Railway Company, with a capital of 15,000,000 yen. The Special Committee appointed by the Municipal Council for the investigation of the project met in conference recently at the Municipal Hall in order to conclude the discussion. After exchanging views and discussing the results of their investigatons, they came to an agreement that although the project is to be approved in principle, it must be rejected for the present, as it would interfere with the unification of the municipal organs of communication.

Narita Railway Company.—At a general meeting of the Narita Railway Company a dividend of 6.5 per cent. was declared and the following accounts were passed:—

	Yen.
Net Profits	106,509.336
Brought over from Last Account...	4,808.918
Total	111,318.254

This amount was appropriated as follows:—

Legal Reserve	6,200.000
Special Reserve	10,650.000
Bonus	9,500.000
Dividends	78,812.500
Carried forward	6,155.754

Japanese State Lines.—According to investigations made by the Railway Bureau, which have been nearly completed, the total length of the Government and private railways in Japan now open to traffic is 5,937 miles. The projected railways will add 5,018 miles. In addition to these, there are certain other

projected railways (branch lines for the most part), which will have a total mileage of 6,118.

In the course of a few years, therefore, Japan will have over 17,000 miles of railway within her borders. Some of the proposed lines it will be necessary to build. If built as light railways, they will consume a capital of Y.603,565,174.

If as ordinary railways at least Y.652,135,174 will be required. The balance of the proposed lines is likely to cost Y591,636,758.

MANCHURIA

South Manchuria Railway.—The aggregate traffic receipts of the S. M. Railway for the fiscal year 1912, ended last March, reached Y.19,825,919, which is an increase by Y.2,298,832 over the preceding year.

The *Manchuria Daily News* hears that the South Manchuria Railway Co. has set aside for the current fiscal year about Y.2,310,000 for maintenance of way and about Y.2,000,000 for construction, improvements, etc., of the lines. This appropriation includes the purchase money for machinery and other materials, which is said to take up about four-sevenths. Three-fifths of the remainder has already been awarded to contractors by tender, leaving the remaining two-fifths still open for tender.

The statement of profit and loss for the fiscal year 1912 to be presented to shareholders at the annual meeting in Tokio on June 14, contains the following:—

Railway	19,907,000	7,846,000
Steamer	535,000	558,000
Mining	9,193,000	7,347,000
Harbour	1,688,000	1,489,000
Land	633,000	1,401,000
Hotels	234,000	271,000
Electricity	849,000	577,000
Gas	172,000	93,000
Sundry receipts	65,000	—
Interest	264,000	—
General management expenditure	—	2,050,000
Sundry losses	—	1,070,000
Interest on debentures	—	5,564,000
Writing off discount on debenture issue	—	340,000
Total	33,540,000	28,606,000

The net profit for the fiscal year amounts to Y. 4,934,000.

Compared with the preceding fiscal year 1911, divided into the tenth and the eleventh working half-years, the increase in the net profit amounts to about Y. 1,267,000.

The total receipts and expenditures with the net profit for the fiscal year 1911 were as follow—

Total receipts	Y.28,155,180
Total expenditures	24,487,653
Net profit	3,667,527

Penchihu-Kanchang Light Rail Line.—The proposed construction of a light rail line, 60 miles long, between Penchihu and Chenchang has been passed by the Fengtien Provincial Assembly.

Antung-Mukden Railway.—A report states that since the Antung-Mukden Line was opened to traffic, the business end of the railway is showing a far better result than was anticipated by the South Manchuria Railway authorities. True, the traffic is run still under some losses, but the receipts are steadily and firmly increasing every week.

Reuter's Yunnanfu correspondent says that Mr. Dawley, the railway engineer, has renewed his contract for two years. There is a prospect of a line to Kochiu being built.

MALAYA

Singapore Railway.—The Legislative Council of the Straits Settlements has approved of the sale of the Singapore Railway to the Federated Malay States Government for the sum of S.S. $4,136,000. It will be remembered that on January 1, 1912, the Railways of the Straits Settlements came under the management of the Federated Malay States Government. The terms called for a lease of 21 years at an annual rental of $95,200, subject to septennial revision. However, the expediency of selling the Railways to the F. M. S. Government was even at that stage under consideration, and a joint committee was appointed to consider the question of price. In the Singapore Legislative Council, the Colonial Secretary in moving that the Council approves the sale, said that it would be within the recollection of hon. members that towards the close of 1911 a proposal was made and approved for the leasing of the Singapore Government railway to the F. M. S. Government for the sum of $150,000 a year. Early in 1912 it appeared that this arrangement did not altogether meet with the approval of the unofficial members of the Federal Council and, in consequence, it was suggested that the F. M. S. Government should buy the railway outright instead of leasing it from year to year. The unofficial members of the Legislative Council were sounded on the subject, and the approval of the Secretary of State was obtained, and afterwards a committee was appointed for fixing the price at which this railway should be handed over. That committee consisted of the Colonial Treasurer, Treasurer of F. M. S., the General Manager of the F. M. S. Railways and the Colonial Engineer, and in October the Colonial Treasurer reported that the price fixed upon by the committee was $4,136,000, which was the amount mentioned in the motion. He did not think there would be any opposition to the selling of the railway, but there might be a certain amount of criticism regarding the figure at which it was being sold, and he would, therefore, give some explanation as to the manner in which the figure was arrived at. The gross capital account at the time of the valuation was $4,725,404.34, whilst the depreciation for rolling stock, plant, tools, etc., on the basis agreed upon, was fixed at $220,293.62. The rebuilding of stations at Bukit Panjang, Bukit Timah, Newton, Holland Road and Cluny Road amounted to $21,500; the replacing of abutments at Orchard Road and Killiney Road, $20,000 each ($40,000); renewal of pontoons and dolphins at Woodlands, $19,649.23; re-construction of telegraph and telephones (new posts), $4,500; cost of re-laying the line from Tank Road to Woodlands, $298,549.26; the total deductions amounting to $604,492.11. The capital account was thus reduced to $4,120,912.23. To this had to be added $29,314.27, being additional expenditure for heavy rails, and after a deduction $14,250, the cost of a house sold to St. Mary's Home (balance not yet repaid to the railway) the balance left, in round figures, amounted to $4,136,000. Regarding any criticism there might be on the gross capital account mentioned he might say that the original estimate for constructing the Singapore railway from Tank Road to Woodlands was $981,440 and the revised estimate in 1901 was $1,447,886, the total cost in 1903 being $1,808,353. It would be seen from that, although the capital account up to the present represented $4,725,404.34, that was a figure for which considerable latitude must be allowed for deduction, and the sum they were obtaining for the railway was by no means one which was disadvantageous to the Colony. With regard to the items that had been deducted he had had the opportunity of looking at the figures of depreciation referring to the Nigerian railway and the amount there was much higher than in their case. So, therefore, the figures, as worked out by the committee, were to the advantage of the Colony. If they considered the profits made, the figures again worked out to their advantage and he did not think that the amount arrived at by the committee was one which in any way should be unfavourable to the interests of the Colony.

GENERAL

Sino-Japanese Railway Conference.—At the recent conference at Tokyo the question of through traffic was exhaustively gone into, the subjects considered being:—Through traffic stations, through fare table, charges for parcels, free weight limits for passengers' baggage, charges for excess weight of baggage, availability of through tickets and their forms, indemnifications for loss and damage to parcels and baggage, settlement of accounts and distribution of the shares of the respective railways, the through traffic Management Office, and the official language, English being adopted.

The business of through traffic management is to be undertaken in turn by the railways concerned, and the Imperial Government Railways of Japan are to be the first to assume the management of the through traffic.

India-China Communication.—An Indian contemporary says:—What is destined to become a link in the railway between India and China is about to be forged in Assam. This is the railway from Gauhati to Sadiya. Surveys, it was stated, have already been made and in about five or six years' time, the railway will be an accomplished fact. The new railway will not pass over the Brahmaputra, but run along the northern bank of the river. It seems that the railway will eventually be extended to the Chinese frontier and it may also possibly form part of the railway between India and Burma. It is interesting to find that the place known as Sadiya has not yet found a definite location on the map. Engineers from Dibrugarh have been trying to find a suitable site for the future capital of the North East Frontier Province. At present, Sadiya is nothing more than a name in spite of its bazaars and a few houses, the latter by no means of the sky-scraper order.

A Non-Partsan Commentary on the Urga Protocol

(*Continued from page 523*)

the frontier. The strictness and alleged impracticableness of the methods employed is said to have had a very bad effect on the import. It has been suggested that a method more efficient and less harmful to trade would be the adoption of preventive measures amongst the herds in Mongolia itself. It is, however, to be supposed that the extreme difficulty of instituting such measures amongst a population so scattered as that of Mongolia has deterred the Russian Government from suggesting the attempt.

To conclude: it appears that the Urga Government are now taxing heavily the import of Chinese goods, while admitting Russian goods free. From Chinese sources it is stated that in consequence living has become very dear, which is probably true. It will be interesting to await the result to see whether the Russian merchant will rise to the occasion, be content with smaller profits, and succeed in supplanting the Chinese or not.

April 10th, 1913.

A Reuter telegram from Chengtu says that Szechuan is reported to be negotiating a provincial loan through the German Consul for Tls. 20,000,000 The slaughter tax and the oil tax will be security.

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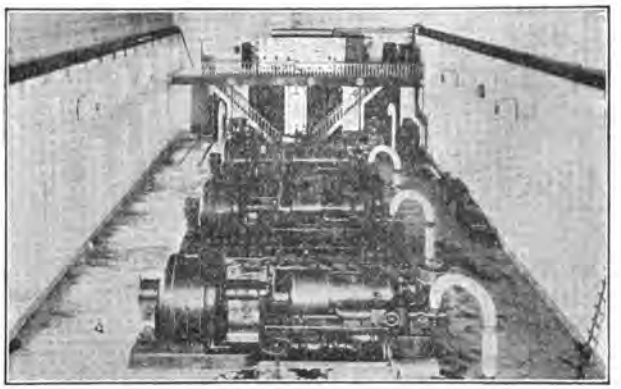

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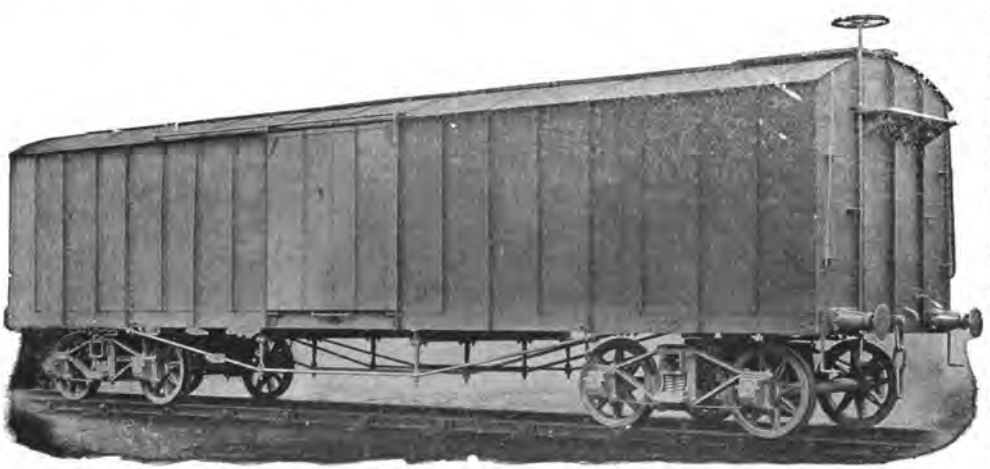

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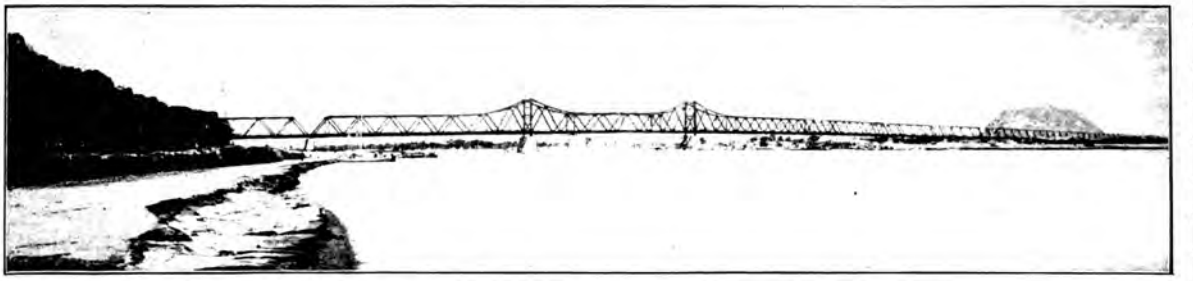
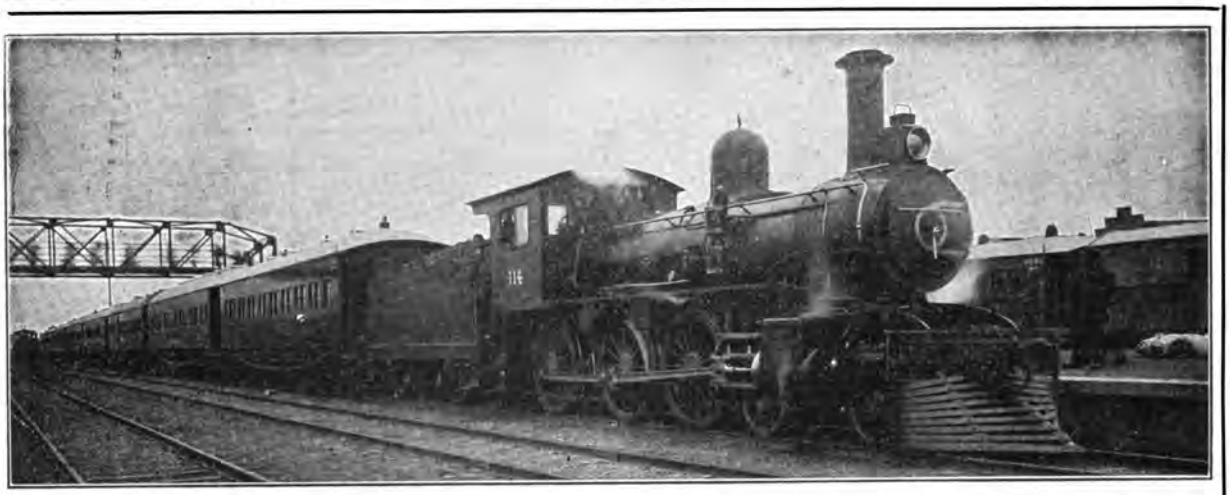


THE GREAT BRIDGE OVER THE YELLOW RIVER NEAR TSINANFU



TRAIN DE LUXE AT TIENTSIN SETTLEMENT STATION

CHINESE GOVERNMENT RAILWAYS OF NORTH CHINA

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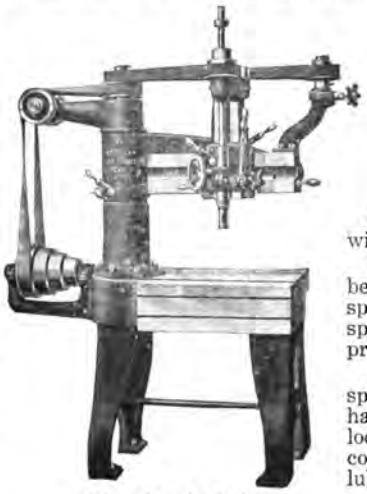
Drills a ½-inch hole through 20-inch cast iron in 1 minute.

6 spindle speeds 300 to 900 revolutions per minute, suited to high speed—drills up to ¾-inch diameter.

Has no equal for rapid drilling and tapping.

For belt and motor drive.

We do an Enormous Export Business.



2 ft., 3 ft. and 4 ft. Arms

Combines the High Productive Capacity of the Radial with the Unquestionable Efficiency of the Sensitive.

There are absolutely no driving gears in this drill, it being driven by a 2" double belt running at a high rate of speed, thus transmitting an abundance of power and speed direct to the spindle. The spindle belt is kept at proper tension by turning the star knob shown at the top.

All the driving and idler pulleys are equipped with our special ball bearings, which consist of a double set of hardened and ground ball races and cones, one set being located at each end of the pulley journals. They are so constructed as to be dust proof and form a retainer for the lubricant which needs to be renewed only at long intervals.

This drill will increase your output.

The American Tool Works Company

Lathes : Planers **Cincinnati, U. S. A.** **Shapers : Radial Drills**

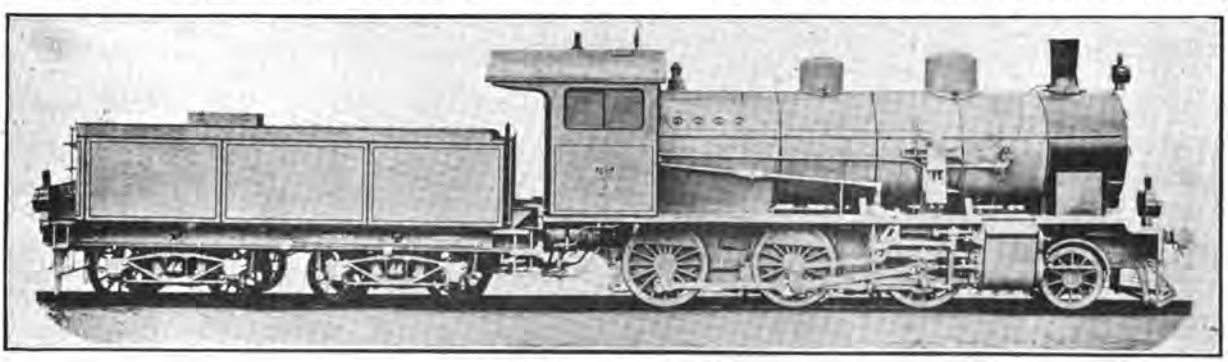
BERLINER MASCHINENBAU, A.G.

(ESTABLISHED, 1852) LATE L. SCHWARTZKOPFF (3,500 WORKMEN)

BERLIN, N. 4.

LOCOMOTIVES

of every Description, Especially with Superheaters



REPRESENTATIVES

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MELCHERS & Co., SHANGHAI

NORTH CHINA
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THE CHIEN MEN GATE, PEKING, TERMINUS OF THE PEKING-HANKOW LINE

CHINESE GOVERNMENT RAILWAYS

PEKING-HANKOW LINE

"THE ROAD THROUGH THE HEART OF CHINA"

Avoid the Cold and Rough Weather in the Sea Trip between Shanghai and the North by the more comfortable Route up the Yangtsze to Hankow, and from there via the Ching-Han Railway to Peking, where through connections for Europe are made with the Trains de Luxe of the Government Railways of North China.

This line passes through the Heart of the Country and enables the traveller to and from Europe to catch a glimpse of Old China. Ancient walled cities, temples and pagodas are seen from the comfortable seats of the weekly trains de luxe operated by this line. From Peking, the great capital of the oldest civilization in the world, the train departs from the famous Chien-Men and carries the traveller through the historical and legendary portions of the Country, to the modern industrial center at Hankow—the Chicago of China. Connections are made with the Cheng-Tai Railway at Chengtingfu, with the Tao-Ching Line at Sin Siang-sien, and at Chengchowfu with the Pienlo Line.

A weekly express train de luxe leaves Peking every Tuesday, and Hankow every Friday, making the trip of over 700 miles in less than thirty hours.

For information apply to any office of the International Sleeping Car Co. or Thos. Cook and Sons.

4-200 foot spans, Taiwan Railway, near Taipeh City, Formosa, Weight 600 tons

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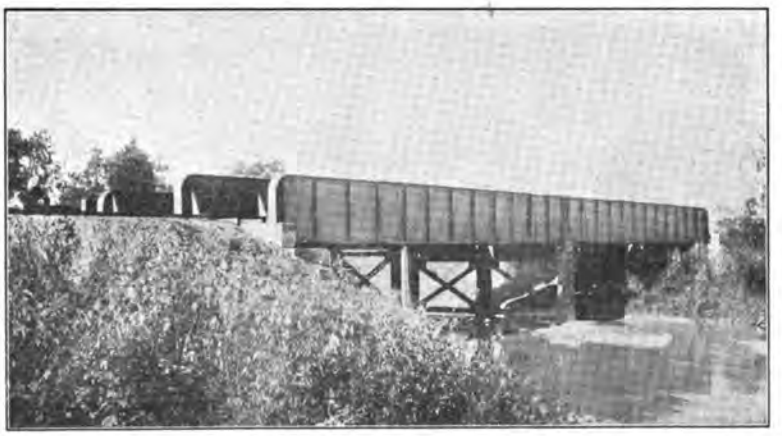
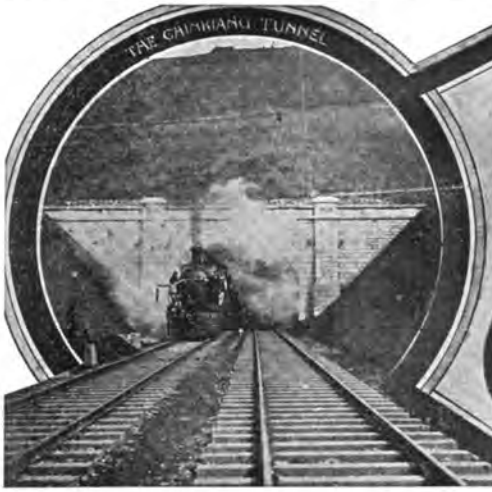


The Line of A Hundred Pagodas



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THREE EXPRESS SERVICES DAILY, WITH RESTAURANT AND SLEEPING CARS

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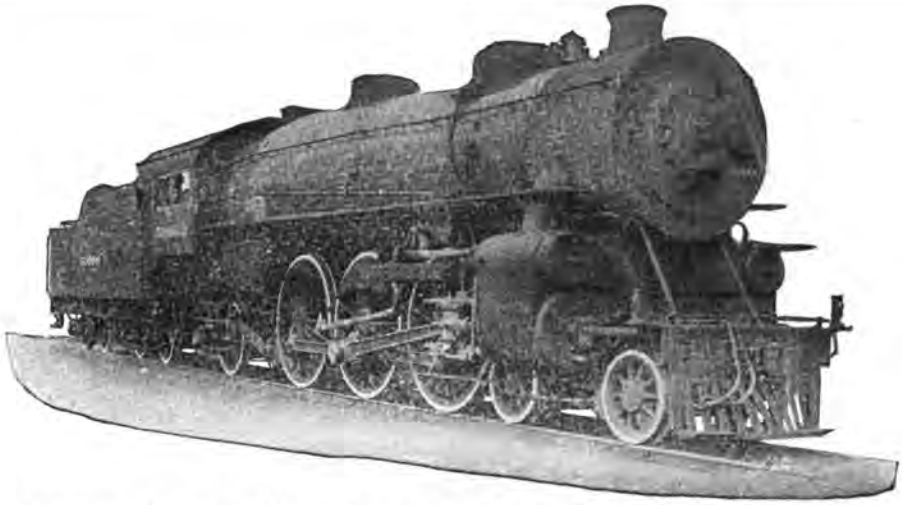
SEE THE NANKING BATTLE-FIELDS

DELIGHTFUL WEEK END EXCURSIONS

SOME OF THE PAGODAS ALONG THE LINE OF THE S. N. R.



EXPERIMENTAL PACIFIC TYPE LOCOMOTIVE, BUILT BY AMERICAN LOCOMOTIVE COMPANY
Tractive Power 40,800 Pounds; Cylinders 27 x 28 Inches; Total Weight on Drivers 172,500 Pounds.

This locomotive was designed and built by the American Locomotive Company at its own expense for the purpose of developing maximum capacity for minimum weight. In service tests it has already shown economy in excess of 25 per cent. over one of conventional design and of equal weight.

FUEL ECONOMY MEANS
MORE POWER AT THE DRAW BAR
WITH THE SAME LABOR AT THE FIRE DOOR

Do you realize that 25 per cent. saving in fuel to do the same work means 33 per cent. increased capacity? This 25 per cent. in fuel economy is available through good detail design, proper selection of proportions and the use of fuel saving devices.

You may not wish to save the 25 per cent. in fuel. You may desire to use the saving in another way. If you burn the same amount of fuel as before the 25 per cent. economy will become 33 per cent. increased capacity. This means a larger locomotive with the latest and best improvements in design.

Economy in fuel means that every pound can be made to do more work. This means more ton-miles per ton of coal.

AMERICAN LOCOMOTIVE COMPANY

30, CHURCH STREET, NEW YORK. Cable Address:—LOCOMOTIVE NEW YORK

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(MITSUI AND COMPANY)

Sole Agents for China, Japan, Korea, Manchuria and Siam

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SHORTEST, QUICKEST, AND CHEAPEST ROUTE BETWEEN THE FAR EAST AND EUROPE

THE SOUTH MANCHURIA EXPRESS

Shanghai to London in			13½ days
Tokio	„ „	„	13¼ „
„	„ Peking	„	3½ „
Dairen	„ Moscow	„	8¾ „

South Manchuria Railway

SLEEPING CAR

THRICE WEEKLY EXPRESS TRAINS.—Composed of excellently equipped SLEEPING, DINING, and 1st CLASS CARS. Operated between DAIREN and CHANGCHUN in connection with the TRANS-SIBERIAN ROUTE and SHANGHAI MAIL STEAMERS.

DINING CAR

CONNECTIONS AT MUKDEN.—These Express Trains connect at MUKDEN with the PEKING-MUKDEN RAILWAY running via TIENTSIN and with the newly organized MANCHURIA-CHOSEN THRICE WEEKLY EXPRESS SERVICE between Changchun and Fusan; the MUKDEN-ANTUNG LINE (now running throughout on standard gauge) connecting with the KOREAN RAILWAY; by this route the journey between Europe and Japan is shortened by two days, and the sea voyage considerably reduced.

OTHER STEAMER CONNECTIONS AT DAIREN.—Regular Steamship Services are maintained from DAIREN to MOJI, KOBE, CHEMULPO, TIENTSIN, CHEFOO, TSINGTAU, and other ports in Japan and China.

S. M. R. YAMATO HOTEL HOSHIGAURA (STAR BEACH)

RAILWAY HOTELS.—YAMATO HOTEL (Tel. Add.: "Yamato") at DAIREN, PORT ARTHUR, MUKDEN, CHANGCHUN, and HOSHIGAURA, all managed by the Company on European lines and providing comfortable accommodation.
At Hoshigaura ("Star Beach"), the finest seaside resort in North China, 5 miles from Dairen, in addition to the hotel, there is a large number of bungalows (for hire at moderate terms), situated in a charming cliff garden and surrounded by beautiful scenery.

TICKET AGENTS IN EUROPE AND THE FAR EAST.—The INTERNATIONAL SLEEPING CAR & EXPRESS TRAINS CO.; The NIPPON YUSEN KAISHA, Shanghai; Messrs. THOS. COOK & SON; the REISEBUREAU DER HAMBURG-AMERIKA LINIE: and the NORDISK RESEBUREU. Time-tables, fares, literature, and any information can be obtained gratis upon application to the Traffic Department.

S. M. R. YAMATO HOTEL, MUKDEN

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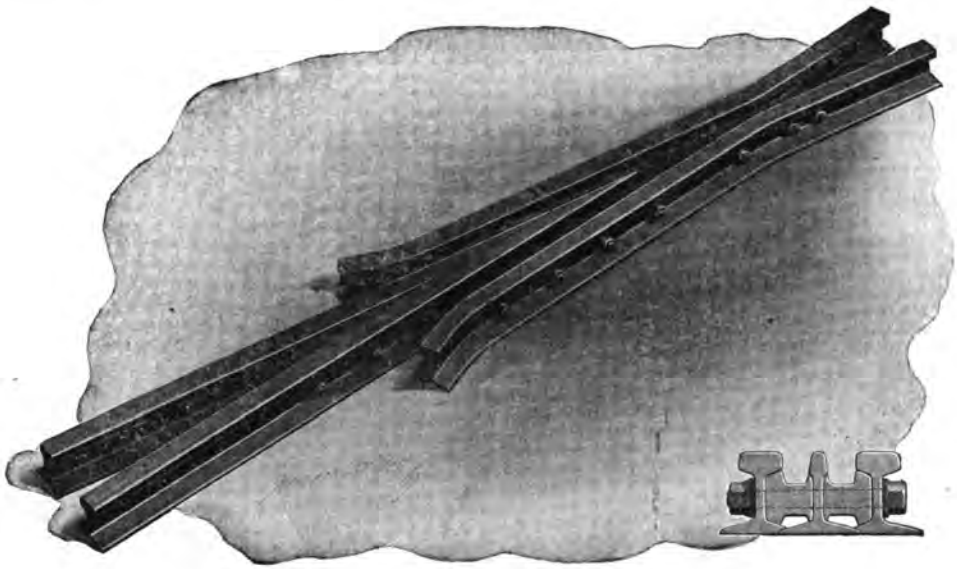
SOUTH MANCHURIA RAILWAY COMPANY, DAIREN, MANCHURIA

Tel. Add.: "MANTETSU" -:- Codes: A. B. C. 5th Ed., A-1, and Lieber's

CARNEGIE STEEL COMPANY
ILLINOIS STEEL COMPANY

Manufacturers of Bessemer and Open Hearth Steel



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The United States Steel Products Company

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AMERICAN CAR & FOUNDRY COMPANY

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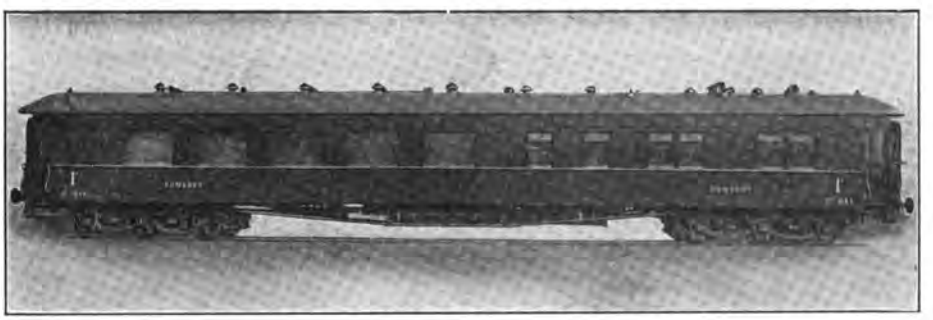
OUTPUT { 150,000 FREIGHT CARS / 1,500 PASSENGER CARS / 2,000,000 CAR WHEELS } PER ANNUM



TYPE OF SLEEPING AND DINING EQUIPMENT FOR ARGENTINE REPUBLIC
Gange 5'-6" (1,676 M.) Body Length 70'- " (21,336 M.) Weight 98,000 lbs. (44,500 Kilos)

INTERIOR SLEEPING COMPARTMENT

INTERIOR DINING CAR

EXPORT REPRESENTATIVE

165 BROADWAY **DUTILH-SMITH, McMILLAN & COMPANY** NEW YORK

CHINESE GOVERNMENT RAILWAYS

THE TAO-CHING RAILWAY

TAOKOU TO CHINGHUA

(CHINESE GOVERNMENT HONAN LINE)

GENERAL VIEW OF COAL MINES ON THE LINE OF THE TAO CHING RAILWAY

"China's Road of Anthracite"

THE TRAINS OF THIS LINE CONNECT AT SIN-SIANG-SIEN WITH THE THROUGH SERVICE OF THE PEKING-HANKOW RAILWAY. IT TAPS THE GREAT ANTHRACITE COAL DEPOSITS OF SHANSI, AND CONVEYS THE PRODUCTS OF THE MINES TO THE NEAREST NAVIGABLE RIVER.

THE PIENLO RAILWAY

(KAIFENG-FU TO HONAN-FU)

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNKLINE"

CHUNG-HUAN TEMPLE, KAIFENG-FU.

The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

Lima Locomotives

We Manufacture all Type and Sizes of Rod Locomotives as well as the Shay Geared

THE CUTS SHOWN BELOW, ILLUSTRATE LOCOMOTIVES RECENTLY CONSTRUCTED AT OUR PLANT.

One of 15-20×26″ 0-6-0-8 Switcher Type Locomotives recently furnished for the Southern Railway.

63″ E. W. T. Boiler. 32,063 Pounds Tractive Power.
185 Pound-Pressure. 4,500 Gallon-Tender.
51″ Drivers.

One of 3-100 ton Shay Geared Locomotives built for Chinese Government Peking Kalgan Railway, Peking, China.

60 3/8″ E. W. T. Boiler. 3-15×17″ Cylinders.
200 Pound-Pressure. 44,100 Pounds Tractive Power.

Our plant has recently been equipped with the latest and most improved machinery, which enables us to build any type or size direct connected locomotives, that your requirements may demand. We also build the well-known Shay Geared Locomotive in 18 different sizes, ranging in weight from the 10-ton up to 150-tons.

Write our agents or New York office for any information you may desire in this line, and for copy of catalog B.

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中華民國政府吉長鐵路行車時刻表

CHINESE GOVERNMENT RAILWAYS

KIRIN-CHANG CHUN LINE

CHINESE MARKET AT CHANG-CHUN

VIEW OF KIRIN FROM THE SUNGARI RIVER

TIME TABLE OF PASSENGER, GOODS AND CONSTRUCTION TRAINS

站名 Name of Station				下行車次數 Number of down trains					站名 Name of Station				上行車次數 Number of up trains				
頭 T.	道 T.	溝 K.	arr. dept.	No. 1 8.30	No. 3 18.15	No. 5	No. 7	No. 9	樺 H.	皮 P.	廠 C.	arr. dept.	No. 2 13.50 **No. 9**	No. 4	No. 6 8.00	No. 8 10.30	No. 10 14.10
長 C		春 C.	arr. dept.	8.45 9.00	18.30	3.30	6.00	9.30	土 T.	門 M.	嶺 L.	arr. dept.	14.50 15.00		9.00 **No. 7** 9.05	11.30 **No. 1** 11.47	15.10 15.20
安 A.	龍 L.	泉 C.	arr. dept.	pass 9.10		pass 3.45	pass 6.15	pass 9.45	馬 M.	鞍 A.	山 S.	arr. dept	15.13 15.15		9.25 9.30	12.07 **No. 9** 12.12	15.35 15.45
卡 K.		倫 L.	arr. dept.	9.35 9.40		pass 4.15	pass 6.45	10.15 10.20	營 Y.	城 C	子 J.	arr. dept.	15.28 15.33		pass 10.05	pass 12.27	16.00 16.05
飲 Y.	馬 M.	河 H.	arr. dept.	10.15 10.25		4.55 5.05	7.25 7.35	11.00 **No. 6** 11.05	下 H.	九 C.	台 J.	arr. dept.	15.46 15.48		10.35 **No. 1** 10.43	pass 12.42	16.20 16.22
下 H.	九 C.	台 J.	arr. dept.	10.40 **No. 6** 10.42		pass 5.23	pass 7.55	11.22 11.25	飲 Y.	馬 M.	河 H.	arr. dept.	16.03 16.13		11.01 **No. 9** 11.10	12.59 13.07	16.40 16.50
營 Y.	城 C.	子 J.	arr. dept.	10.55 11.00		pass 5.38	pass 8.10	11.40 11.50	卡 K.		倫 L.	arr. dept.	16.53 16.58		pass 11.55	pass 13.52	17.15 17.40
馬 M.	鞍 A.	山 S.	arr. dept.	11.13 11.15		5.53 6.00	8.25 8.30	12.05 **No. 8** 12.10	安 A.	龍 L.	泉 C.	arr. dept.	pass 17.23		pass 12.25	pass 14.22	pass 18.10
土 T.	門 M.	嶺 L.	arr. dept.	11.35 **No. 8** 11.45		6.25 6.35	8.55 **No. 6** 9.02	12.35 12.45	長 C.		春 C.	arr. dept.	17.33 17.45	8.00	12.40	15.37	18.25
樺 H.	皮 P.	廠 C.	arr. dept.	12.40		7.35	10.00	13.45 **No. 2**	頭 T.	道 T.	溝 K.	arr. dept.	18.00	8.15			

Nos. 1, 2, 3 and 4 are passenger trains. 第一、二、三、四次係客車
,, 9 and 10 ,, goods ,, 第九、十次係貨車
,, 5, 6, 7 and 8 ,, construction ,, 第五、六、七、八次係工程車

Traffic Manager.

Chinese Government Railways

The Cheng-Tai Railway

(CHINESE GOVERNMENT SHANSI LINE—CHENGTINGFU TO TAIYUANFU)

VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational center, and famous for the fine quality of its artistic embroideries.

The Peking-Kalgan Line

"THE ROAD TO THE GREAT WALL"

This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

CHINESE GOVERNMENT RAILWAYS

TIENTSIN-PUKOW LINE

Express Passenger Train Service

STATION AT LIU HUAI KUAN

STATION AT PENG-PU

TIENTSIN-PUKOW RAILWAY. BRITISH OR SOUTHERN SECTION

Notice is hereby given that through express service of first, second and third classes with dining and sleeping cars from Tientsin to Pukow has been inaugurated on December 4th, 1912, and until further notice. These trains will leave Pukow on Mondays and Fridays, and Tientsin, on Wednesdays and Saturdays, stopping only at the principal stations en route.

Departure			*Arrival*		
Monday, Friday	Pukow	9.00 A.M.	Tuesday, Saturday	Tientsin	11.07 A.M.
Wednesday, Saturday	Tientsin	1.00 P.M.	Thursday, Sunday	Pukow	3.15 P.M.

Detailed Time Table will be found hereafter in the back pages of this paper.

EXPRESS FARE TABLES

	PUKOW-HSUCHOWFU	HSUCHOWFU-TSINANFU	TSINANFU-TIENTSIN
1st class	$13.90	$13.60	$14.60
2nd ,,	9.30	9.05	9.70
3rd ,,	4.65	4.50	4.90

LUGGAGE ALLOWANCE

1st class, 150 catties; 2nd class, 100 catties; 3rd class, 50 catties.

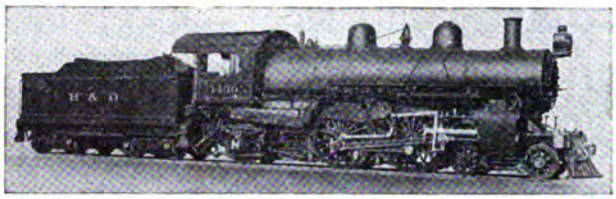
Excess luggage is charged at one (1) cent per picul per mile on the express trains and half a cent on ordinary trains.

Only first class passengers are entitled to book sleeping berths, at $5.00 per berth.

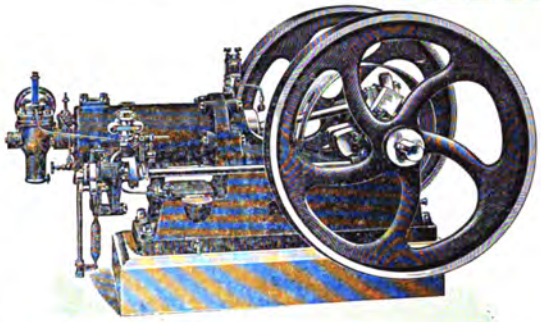
The Railway ferry steam-launch, lying at the jetty above the Japanese Hulk, will carry passengers across the river forty minutes before the trains leave. Passengers may book their tickets at the office on the ferry jetty.

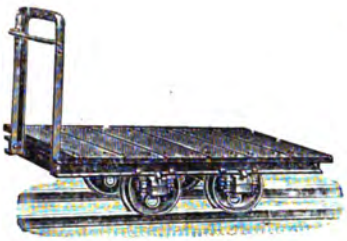
The ordinary trains running between Pukow-Hsuchowfu, Hsuchowfu-Tsinanfu, and Tsinanfu-Tientsin will continue as before. For time refer to the Time Table.

For further particulars, etc., apply to the Traffic Department at Tientsin or Head Office, Nanking.



BALDWIN LOCOMOTIVES





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Railways, Mines, Arsenals, Mints, Mills, Electric Light & Power Plants, Telephone Systems, Flour, Oil, Cotton and Woollen Mills, Industrial Plants For Any Purpose, Designed, Equipped and Erected

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ROOFING
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AUTOMATIC CAR COUPLERS, BOLSTERS, ETC.
The Gould Coupler Co., New York.

WELL DRILLING MACHINERY
Star Drilling Machine Co., Akron, Ohio.

BOILER STAY BOLT MATERIAL
The Falls Hollow Staybolt Co., Cuyahoga Falls, Ohio.

METALLIC PACKING AND LOCOMOTIVE SANDERS
The United States Metallic Packing Co., Philadelphia.

STAIR TREADS
The American Mason Safety Tread Co., New York.

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Deutsche Waffen and Munitions Fabriken, Berlin, Karlsruhe.

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Waffenfabrik Mauser A. G., Obendorf, Neckar.

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Skodawerke A. G., Pilsen.

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WAR VESSELS
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MOTOR BOATS
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PACKING MATERIALS AND TECHNICAL RUBBER GOODS
Alfred Calman, A. G. Hamburg

OIL ENGINES
Alexander Shanks & Co., Arbroath

CANTON-KOWLOON RAILWAY

VIEWS ON THE BRITISH SECTION (22 MILES) **VIEWS ON THE CHINESE SECTION, 89 MILES. (Chinese Government Railways)**

TEMPORARY STATION AT KOWLOON

TAI SHA TAN STATION, CANTON

QUICKEST AND CHEAPEST ROUTE BETWEEN CANTON AND HONGKONG THROUGH VARIED AND BEAUTIFUL SCENERY

THE "EIGHT GENII RANGE" FROM TAI-PO

NEAR LE LOONG, CANTON-KOWLOON RAILWAY

TWO EXPRESS CORRIDOR TRAINS EACH WAY DAILY **HOT MEALS AND OTHER REFRESHMENTS SERVED**

THE HUNCH-BACKS AND PYRAMID HILL

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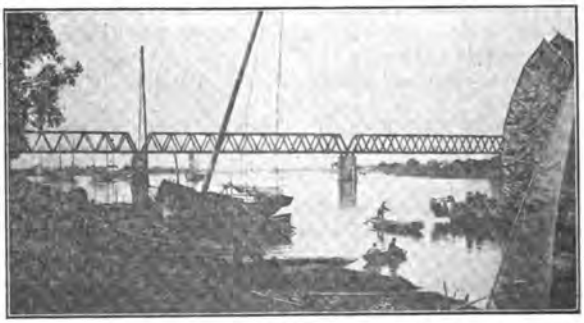

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SUMMER SEASON 1913.

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Arrive Canton (Tai Sha Tou)	11.00 a.m. 6.41 p.m.	Arrive Hongkong (Kowloon)	10.43 a.m. 6.54 p.m.

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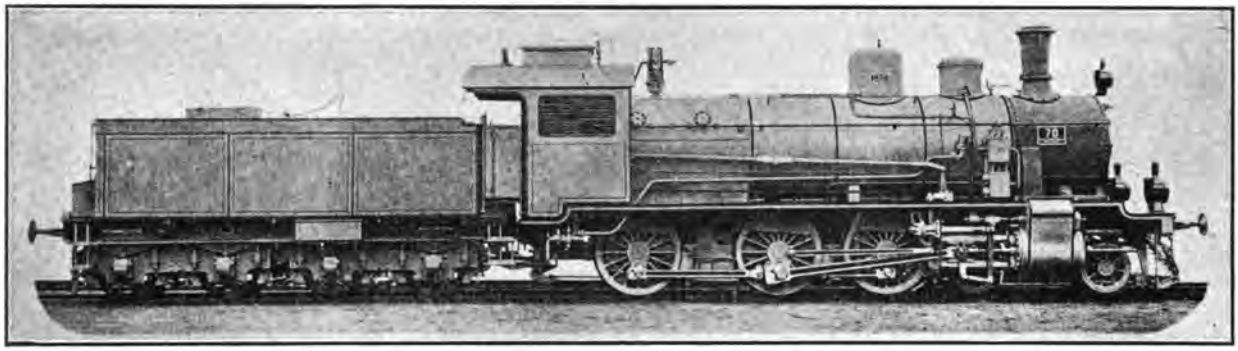

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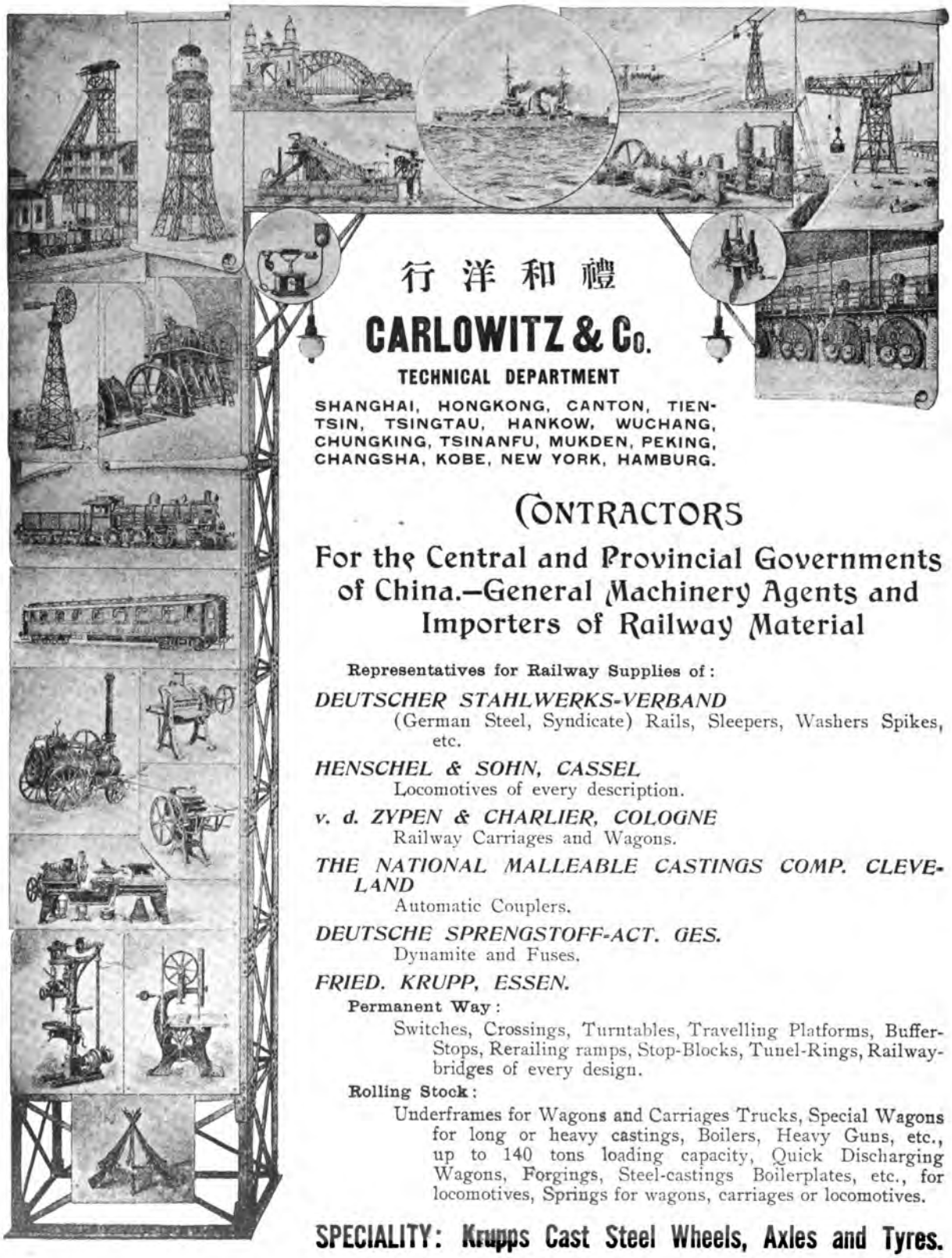

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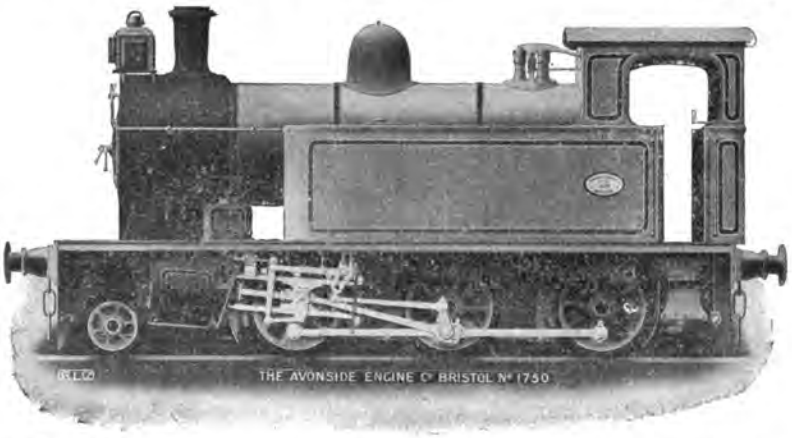

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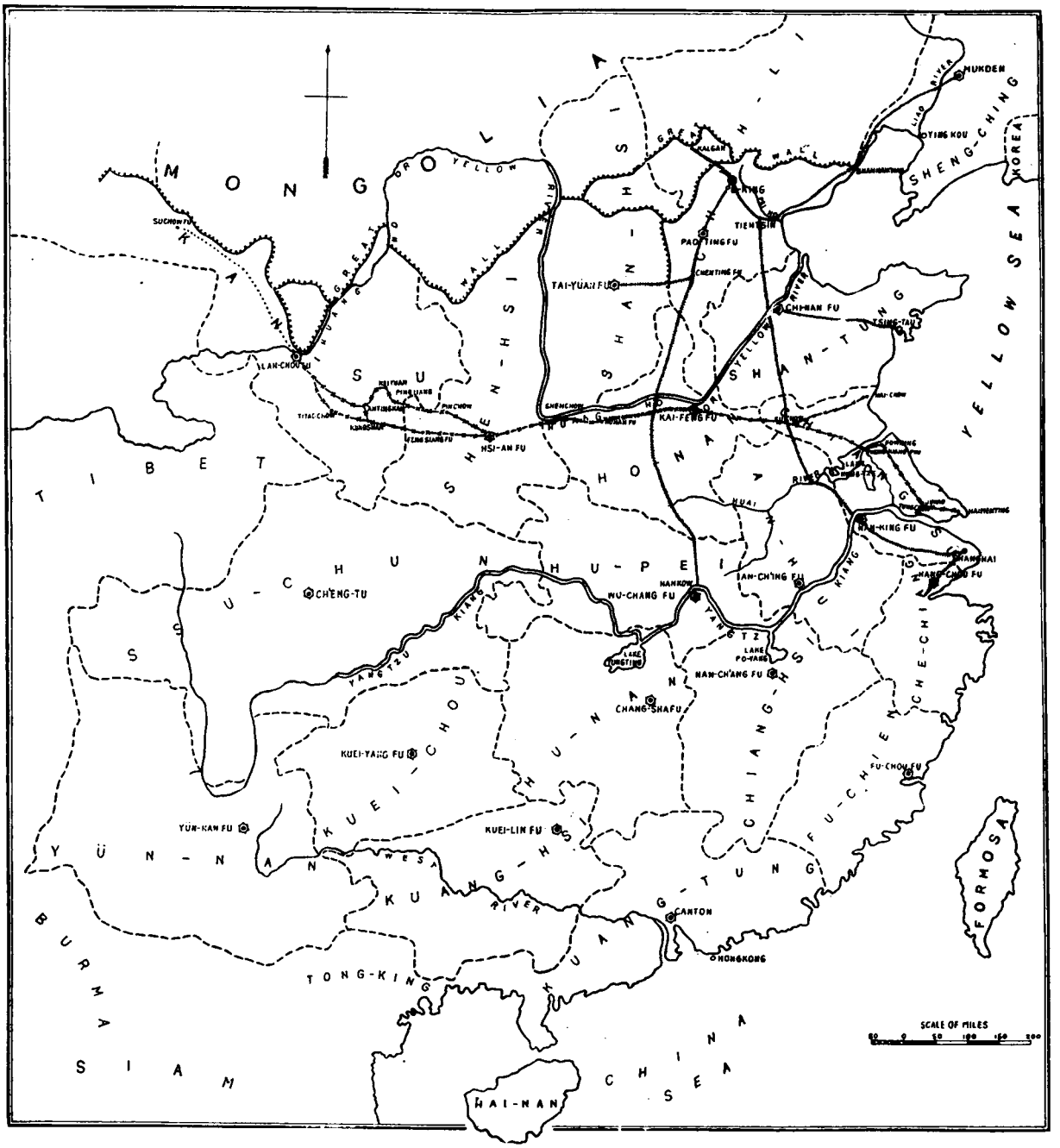


The wavy lines denote existing railways north of the Yangtsze; the dashes and crosses the proposed "Belgian" line, and the dotted line the option for extension

Volume X

June 1913

The Development of Railways Short editorial reproduced from the *Rangoon Times* discussing a long-proposed railway connecting China with Burma.
Republic of China - Map of projected Trunk Lines Full page with Chinese & Western phonetic place names.
Peking-Mukden Railway 5 plus pages of Annual Report & Accounts. 2 s of Managing Director Li Tsoi-chee. the railway HQ building at Tientsin and full page route map.
Shanghai-Nanking Railway 12-plus page annual report of the railway for the year 1912. 2 photographs and route map.
Far Eastern Railways Short reports on the following railways :
Shantung Railway Company
Pukow - Sinyangchow Railway
Canton-Hankow Railway
Yunnan Railways
Shanghai-Nanking Railway - weekly returns for May 1913
Anking-Chengyangkuan Railway Text of construction contract.
"Yuet-han" Railway (Yueh-Han)
Soochow-Chiahsing Railway (Suzhou-Jiaxing?)
South Manchuria Railway- Short progress report and half year profits.
Burma-China Railway Report that question of this railway had been discussed again by the Liverpool & Manchester Chambers of Commerce including three possible routes.
Chinese Government Railways -Shanghai-Nanking Railway A letter published by M. Y. Chung, Managing Director advising that use of the railway was subject to new By-Laws and Regulation "exposed in the premises of the Company" .

July 1913

Far Eastern Railways Short reports on the follwing railways :
Chekiang-Kiangsi Railway
Kiangsu Railway
The Lung-Tsing-U-Hai Railway
Canton-Hankow Railway
Machine Shops for Hankow
Hankow-Ichang railoway
Shanghai-Nanking Railway - weekly returns for June 1913
Tsingkiangpu-Tungchow Line
Likin on Railways
Cheng Tai Railway
Nationalizing the Railways
The Pu-Hsin Railway Loan negotiations concerning a pre-revolution demand by the British for a projected line between Pukow and Hsinyang (Sinyang /Xinyang) in Honan Province. This would connect the Tsin-Pu and Kin-Han Railways .
Railways in Yunnan
Tientsin-Pukow Line Timetable for bi-weekly express through trains .
South Manchuria Railway
Kirin-Changchun Railway
Canton-Chungking Railway Rebellion had prevented the agreement being signed.
Chinese Government Railways - Tientsin-Pukow Line Advert with new timetable for a daily through service. (Repeat of April edition advert)

August 1913

Peking-Kalgan-Tatung-Fu Railway - Work on Changsu Extension- 7-page report on construction progress. 23 phographs, drawing & sketch-maps.

Peking-Kalgan-Tatung Railway List of important bridges on the Chnagsui Extension

Another Belgian Railway Report on an agreement to build a new railway between south and north Shansi Province.

Growth of Belgian Interests in China An editorial discussing the growth of Belgian business investments, in particular the construction of railways in the country and whether this was a front for Russian money and influence.

Tientsin-Pukow Line - Northern Section Annual report & accounts . 3-pages with sketch map of route.

Kowloon-Canton Railway Annual Report & Accounts. 6 plus pages.

The Pukow Settlement The British consul at Nanking reported there had been little progress in developing a new settlement near the southern terminus of the Tientsin-Pukow Railway.

Far Eastern Railways Short reports on the follwing railways :

Yunnan Railways

Canton-Hankow Railway

Shanghai-Nanking Railway - weekly returns for July 1913

Wuhu Railway Schemes

Changsha-Chiuchou Line

Railways in Shantung

South Manchuria Railway

September 1913

Chief Railway Adviser to China Japanese engineer Dr. S. Hirai had been appointed as Chief Adviser to the Chinese Govt. Board of Communications.

Starving China's Railways An editorial suggesting that railway development was being starved of funds because the new Republican adminisitration was diverting railway earnings to other ministeries because the Board of Communications weakness.

Railways, Roads and Rebels. The remnants of the armies who had brought about the the new republic were still armed and on the loose ,pillaging and causing havoc in the country. The bands of marauders needed eliminating.

Railway & Telegraph Loans A short report opining that foreign loan installments and interest due were in default and that the Govt should make up the shortfalls.

Far Eastern Railways Short reports on the follwing railways :

Peking-Hankow Railway

Hai-Lan Railway

The Hukuang railways

Yunnan Railway Project

Tainanfu-Sinminfu Railway

The Lotung Railway

Shanghai-Nanking Railway - weekly returns for August 1913

South Manchuria Railway Traffic Returns for August.

October 1913

Germany's Rights in Shantung - The Tsingtao-Tsinanfu Railway A 7-page report about this railway. 10 photos and 2 sketchmaps (one full page) and Accounts balance sheet.

The Railways of China -Report of Conditions in 1912 2 pages mainly about "General Affairs" on the Peking-Hankow Railway and Peking-Kalgan Railway

Japanese Concessions in Manchuria - Important Feeders for the South Manchuria Railway. 1 sketch map of railway lines.
Japanese Concessions in Manchuria A report about new railway concession rights being 'awarded' to Japan and that thes had upset both the Americans and British who considered these "rights" conflicted with their agreements with China's
Peking-Kalgan Railway (continuation of the second item above)
Far Eastern Railways Short reports on the follwing railways :
Chengtu-Sianfu (Chengdu- Xian) Railway
Pukow- Sinyangchow Railway
Chekiang Railway
Proposed Lines
Another Belgian Railway
Tientsin-Pukow Line
Peking-Hankow Railway
Transfer of Officials
Russian Railways in China & Railway Concessions
The Lotung Railway
Nationalization of Tungpu Railway
A Japanese Concession
Yuet-Han Railway (Yueh-Han)
Lung-Tsing-U-Hai Line
Kowloon-Canton Railway
Shanghai-Nanking Railway - weekly returns for September 1913
South Manchuria Railway Traffic returns & report on new share issues as well as carriage orders for the SMR Workshops at Shohokou.
Tokyo-Peking Service The two country's railways had arranged through trains with ferry services . These started in Shimbashi and terminated in Peking, travelling via Shimonoseki , Fusan, Antung and Mukden.

November 1913
An Appreciation of China's Railway Engineers By Publisher Geo. Bronson Rea. Mainly about Zhan Tianyou and the other Chinese engineers who built the Peking-Kalgan Railway. 4 photographs.
The Tsingtao-Tsinanfu Railway A 5-page report about the construction of this line. 17 photos and one full page sketch map of the route
China's Railways Accounts Report on a conference on standardizing the accounting methods for China's railways & establishing a
Railway Clearing House .
Commission to Unify Railway Accounts The first conference had been held in November in Peking.
Peking-Kalgan Railway A second-half annual report for 1912
Proposed Sinyang-Pukow Railway Report that an agreement for this line had been approved . The line had been surveyed by Chief Engineer-designate T.J. Bourne. 1 sketch map of route.
Tientsin- Pukow Railway - Southern Section - The Line and the Rebellion This editorial reports on the difficulties which railway engineers and officials endured during the rebellion while trying to protect railway property and to repairs railway bridges and facilities damaged by rebels. 11 photographs of bridges under repair and a portrait of Managing Director Mr Chao Ching-hua.
The Nanking-Pukow Ferry boat A report that the railway's new Ferry "Fei Hung" had been launched and would make connectons between the Tientsin-Pukow Rly and Shanghai-Nanmking Rly much more convenient.
The Proposed Sinyang-Pukow railway (continuation of earlier article)

Canton-Hankow Railway An update on the construction of this line and its various sections and how a landowner was making exhorbitant price demands for land near Wuchang. Work was also about to start at Yochow.
Canton-Macao Railway A report that the Government had arranged for a loan of $15 million from British capitalists for this projected line.
Kiangsi Railway This projected line between Kiukiang and Nanchang was to built by Japanese interests. Howver agitation for nationalizing this line had commenced among local Chinese.
The Honan Railway A report that work had commenced on a link between Kaifeng and the Tientsin-Pukow Railway at Hsuchowfu.
Shanghai-Nanking Railway Traffic returns for October
Kirin-Changchun Railway Repairs had been completed and twice daily services would resume.
South Manchuria Railway Earnings for October were reported.
Tientsin-Pukow Railway A report of traffic receipts for 1912 for the Southern Section.

December 1913
The Hai-Ho Conservancy A historical account of the efforts of this board to improve the river channel below Tientsin to allow sea-going steamers access to the port via the Taku Bar. Not relevant to railways but ther is one sketch map of the river which clearly illustrates the railway line's sidings to the river cargo wharves and the mainline rail loop in an out of Tanku station. Prior to the building on this loop, trains from Tangshan direction had to pull into the Tanku station and then reverse direction to travel on to Tientsin.
New Railway Through Hunan and Kweichow Provinces Report about a new contract having been signed by the Chinese government and London financiers Pauling & Co. for a projected line between Shasi (沙市) on the Yantsze and Shingyi (Xingyi 兴义) in Kweichow Province. This had replaced an earlier agreement for line between Canton and Chungking. 1 sketch map showing route.
South Manchuria Railway Financial estimates for the next year.
China's Railways in 1913 A report that 1913 was historically the record year for advancement of railway construction.
New German Railways in China A reporting stating a new agreement had been signed with Gremany for new lines connecting with the Tsingtao-Tsinanfu Railway.
The Hankow-Ichang Raiilway Report that the terminus would now be built at Hankow and not at Kwangshui on the Peking-Hankow line.
Starving China's Railways China's Premier, Hsiung Hsu-ling had writtena letter to the F.E. Review responding to criticism in a former edition about shortage of investment.
China's Railway Budget a detailed set of figures setting out the estimates for the year July 1913 - June 1914.
Railways in China A Japanese report giving the completed mileage of Chinese railways as 2,439 miles.
Shanghai-Nanking Railway Traffic returns for November.
The Hailan Railway A report that work would begin soon.
Kiangsu Railway Shareholders had agree to hand control to the government.
Tientsin-Pukow Line Through bookings and tickets were being issued.
American Section of the Hukuang Line It was hoped to complete the survey the following July. Mr Randolf had taken over as Chief engineer after the departure of Beckwith.
South Manchuria Railway Traffic earnings for November

Supingkai-Taonanfu Railway Report that this line would be constructed in the following spring.
Kirin-Changchun Railway . A new station at Kuutien had opened on December 10.
Penchihu-Niuhsintai Light Line The project to build this line near Penchihu (Benxihu) in Manchuria was still struggling.

January 1914
International Intrigues in Chinese Railways A long multi-page editorial presenting an analysis of Belgian and French railway activities in China, disclosing the triumph of Russian diplomacy, the side-tracking of British diplomacy, the loss of China's freedom of action , and the menace which overhangs her. This is follow up on an editorial published in the August 1913 edition entitled " Growth of Belgian Interests in China". In this editorial the writer also covers British railway activities and mentions the amalgamation of the British & Chinese Corp & the Pekin Syndicate into a new company, Chinese Central railways Ltd , registered in London in 1904. The full text of a 1905 agreement between British and French capitalists for the constructrion of the Sinyang-Pukow and Hankow-Chegntu railways is included. This is followed by the Loan Agreement for the former between the Chinese government and Chinese Central railways Limited of London. There is finallya description of the Pekin Syndicate's activities at the their coal mines in Honan. Three sketch maps and small portrait photo of Lao Chu Chang, Managing Director of the Pukow-Sinyang railway.
Kaohsien Mining railway A note that the Ministry of Finance was offering this railway at Fangshan near Liuliho, Chihlu for sale at 2.4 million Taels. Only Chinese citizens could apply.
Prospective New Railways The government had abnnpunced a plan to extend the railway from Peking to Jehol (熱河 Rehe) , then to Chifeng and finally Shunyi.
Peking Hankow Line An announcement that the main station was likely to be removed .
New German Lines The Tsinan line was to be extended to Ichowfu and beyond and would provide an important connection with the Peking-Hankow Railway.
Anking-Chengyankwan Line A petition had been presented for building this line but there had been much criticism.
Ningpo-Hangchowfu Line A report that this line was far from completed.
Ichang-Szechuan Line A report that work on this railway would be resumed . The revolution had stopped all the good work being carried out. German engineers were still surveyong the Hankow-Ichang section but it was quiet following the Pan Yue San " untoward incident" .
Railways for Fukien A report that Admiral Liu Kuan-hsiung had petotioned Yuan Shih-kai for provision of railways in Fukien.
Kiukiang-Nanchang Railway a report that construction was being pushed on steadily and two new ALCO locomotives had been delivered.
Shanghai-Hangchow Railway the Board of Communications had assumed control of the Kiangsu section of this line.
Projects The French were reportedly pressing for a Yunnanfu-Chengdu railway concession to link with the Tatung-Chentu line.
Shanghai-Nanking Railway Traffic returns for December.
South Manchuria Railway a report that the company was planning to raise a further loan. Also a report that Chinese in Tiehling wished to have the terminus of a new line connecting Hailungchang to be moved.
Burmah-China Railway The Manchester Chamber of Commerce were still

exploring this issue and a new paper had been presented for consideration.

February 1914

The Projected Railways in Szechuan, Yunnan and Kweichow Provinces A comprehensive 26-page report on government plans to open China's wealthy mountain-locked western provinces by rail. This would be achieved by the granting of construction concession rights to foreign financial institutions. 45 photos of most remote mountainous scenes and 5 sketch maps of proposed routes and provincial capital cities etc.

Railway Development of Western China An article by Arthur J Moore-Bennett discussing how the West appeared more interested in the political and military value of railway development to themselves rather than the purported objective of helping China open her mineral and other resource wealth. (My note: Moore-Bennett was a Fellow of the Royal Geograpical Society and traveller in China during this period, writing articles about her mineral wealth. He appears to have been a controversial figure, upsetting the British Establishment in China. He was accused in the Jan 1915 edition of 'The Engineer' of making "Reckless Statements about China" .

International Intrigues in Chinese railways The Belgian Legation in Peking had notified the Chinese Government that the "Belgian Loan " for the Lung-Tsing-U-Hai was "Franco-Belgian", and not purely "Belgian" which the Chinese had initially been given to understand. This had come to light after an argument over whether a French or Belgian Chief Engineer would be appointed.

Proposed New Railways in China A report that negotiations were in hand for an extension of the Shanghai-Nanking Railway to Nanchang and Changsha.

Cost of Railway Building in South China Frank Grove, Chf. Engineer of the Chinese Section of the Canton-Kowloon Railway had written to the FER to set straight inaccuaracies in the labour rates quoted in the Editor's article in the November issue.

Railway Museum for China A report that the Ministry of Communications intended to establish a railway museum in Likuolo Lane behind the Ministry of Communications. It would be placed under the administrative control of Mr Hua Nan-kuei, a technical expert trained in France.

March 1914

New Railway Station at Changchun The new station for the SMR had been completed by the end of February; work had been accelerated by the mild winter.

The Control of Inner Manchuria- Projected Railways North of Peking An editorial discussing the prospects for new railways going north from Peking, notably the Peking to Jehol line and beyond. Also proposed lines beyond Kalgan to Dolonor (Duolunnuo 多伦诺) , Chihfeng (赤峰) , Chaoyangfu (潮) and Ichow (Yizhou 义州) . 6 photographs of remote scenes and 1 route sketchmap.

Linking Up Kiangsu and Hunan A trport thast the Government had signed an agreement with the British & Chinese Corp. to link up these provinces with a railway from Nanking to to Hweichow (徽州) and thence throuh Nanchang to Pinghsiang. The existing line from Pinghsiang to Chinchow would be taken over.

Railway Tunnelling in China The full text of a paper presented to the Engineering Society of China in Shanghai by M.H Logan . The author had earlier been involved in tunnelling work on the Kowloon-Canton Railway (KCR) . 7 photos and one sketch of tunnel works on the KCR .

Fukien Railway. The Ministry had sent officials to take over this short railway.
Chefoo - Weihsien Line Report that the government would take over the bullding of this line.
The Chekiang Railway Shareholders were discussing handing this line over to government control.
The Lung-Tsing-U-Hai Line The price of land in the vicinity of this line was appreciating rapidly .
Pukow-Sinyangchow railway a flying survey had been completed. A number of foreign engineers are mentioned engaged on this task..
Railway Work in Honan Work connecting Kaifeng with the Tiesntsin-Pukow line was continuing apace.
Canton-Hankow Railway Embankment work was expected to commence for this line between Wuchang and Changsha. The project had been divided into three sections.
Shanghai-Nanking Railway Traffic returns for Janueary.
South Manchuria Railway Earnings report for January.
Light Rail Line to Fuchou The SMR had had completed a survey for this line.
New Railway Freight Tax at Harbin The Chinese Eastern Railway had introduced a new freight tax.

April 1914
The South Manchuria Railway Co. A one-page descripion of the company's new workshops at Shahokou (Shahekou, Dalian) . 1 photograph of workshop building with ALCO locomotives in the foreground.
Railway Management in China A report that a debate was raging in the press about the "bad management" of the Shanghai-Nanking Railway. The article concludes with the opinion that a uniform method of accounting for all railways was needed for statistics to be compared rationally.
The Nanking-Nanchang-Pingsiang Line A one-page report detailing the contract details negotiated for the building of this line by the British 7 chinese Corporation. One sketch map fo the route and a small portrait of S. B. Shen who surveyed the line. This is an update of an article in the March 1913 edition.
Railway Passenger Tax in China A report by Dr. C. C Wang (Wang Ching-Chun) discusses the prospects for imposig tax on rail passenger tickects in China and draws comparisons with other Western nations. (This is a follow - up on articles published in April & May 1913 about unification of the nation's railway accounts.)
Construction of Railways in China A petition to the President to curtail the taking of further loans for the construction of new proposed railways until all questions about previous loans and the take-over of private lines, had been settled. The Presidebt had approved this proposal.
The Chikiang Railway A report that a settlement had been reached with shareholders for the government to take over of this line.
Kirin-Changchun Railway Traffic receipts for March had decreased.
Pukow-Singyang Line . The original intention of starting construction from both ends simultaniously could not be done because of disturbances in Honan.
Shanghai-Nanking Railway Traffic receipts for March.
South Manchuria Railway Estimate of the current year's profits and returns for March 1914.
Chinese Eastern Railway This railway had lowered freight rates on coal from Ugolinya , which was a junction station for the Sucheng Colliery. (This might be a reference to the Suchan colliery within Russia's Maritime Province)

Personal An editorial praising the appointment of A. G. Cox as Eng.-in-Chief of the British Section of Hukuang Railways (Wuchang to Kwangtung).
& announcement that A.W.U. Pope (a railway engineer) had retired .

May 1914

Railway Development in Shantung A correspondent discusses the merits of a new short railway line being proposed from Ichowfu (Yizhoufu 沂州府) to meet the existing Tsingtao line. The final paragraph reports that a chinese Government honour had been conferred on railway bridge engineer L. P. Ridgway (this might be misprint for I.P. Ridgway)
The Chefoo Railway and Breakwater Projects The "Chefoo Morning Post" explains the "vicissitudes" of this proposed project. The doubling of estimated consruction cost was causing "a certain amount or perturbation" among the advocates.
The Lung-Tsing-U-Hai Railway A report of "a rumored change of plan" since an agreement had been signed for building this line.
Operations of the Chinese Eastern Railway The U.S Consul at Harbin submits a four-page report on the operations of this line and the difficulties it has been facing, including future competition from the Amur railway. 11 photos of CER buildings.
Shantung Railway A report of receipts for 1913.
Peking-Hankow Railway A report that conditions for a new loan had been finalized with international finance houses.
Hangchow-Ningpo Railway A decision had been taken to erect a bridge across the West Lake to join the two lines.
Yuet-Han Railway The shareholders of the Kwantung Section had elected Liang ching-kwai as Managing Director, having secured more votes than Jeme Tien-yu.
Shanghai-Nanking Railway Traffic returns for April.
South Manchuria Railway The agreement for construction of 5 new railways as feeder lines for the SMR was progressing;Traffic earnings for Changchun station and SMR earnings for April.
Personal W.R Randolf appointed Chf Eng of the American Section of the Hankow-Szechuan Railway and F. A. Harris Chf. Accountant of ther Hankow-Canton Rly has returned to Peking-Mukden railway at Tongshan.
Advertisements
Hurst, Nelson & Co. Ltd. Shanghai agent for Glasgow Rolling Stock Co.
Tientsin-Pukow Railway Full page advertisement Timetable w.e.f. 1st may 1914
Chinese Government Railways of North China Full page advertisement , including 3 photographs of Peking station and the 'Train de Luxe' operated by Wagon Lits company.
Berliner Maschinenbau, A.G Half page advert by this German locomotive manufacturing company with agents in Shanghai and Tientsin
Peking-Hankow Line Full page advertisement , including 1 photograph of the Chien men gate at Peking.
Shanghai Nanking Railway Full page advertisement for this line. Small photographs of a train leaving a tunnel and several pagodas.
South Manchuria Railway. Full page advertisement for this railway . 6 small photographs.
United States Steel Products. Full page advertisement by this company for railway track and other associated equipment.
Chosen Railways Full page advertisement showing connecting services to China with Fusan and Changchun
Chinese Government Railways - Tao-Ching Railway & Pienlo Railway

Full page advertisement with 2 photos.
Lima Locomotives Full page advertisement with agent Shewan Tomes' Shanghai address.
Chinese Government Railways - Kirin - Chang Chun Line -Timetable.
Baldwin Locomotive Works Agents in Shanghai - Arnold Karberg & Co.
Canton Kowloon Railway Full page advertisement with 8 small photos and 1913 Summer Season timetable for through trains.
Chinese Government Railways : Cheng-Tai Railway and Peking-Kalgan Railway.
Hanover Locomotive Works Agents in China: H Diederichsen
Tientsin-Pukow Railway Full page advertisement for Express Passenger Train Service, including 2 photographs of stations and timetable,
Arnold Karlberg & Co. Full page advert for railway equipment.
The Shantung Railway Half-page advert for the "Road Through the Country of Confucius"
Orenstein-Arthur Koppel Agent in China : Siemssen & Co.
Carlowitz & Co Full page advertisement for railway equipment and other machinery supplied for the China market
Henschel & Sohn, Cassel Half page advertisement for locomotives. 1 photo
Avonside Engine Co. of Bristol Half page advertisement for locomotives. 1 photo

latest version 20.02.2020

THE DEVELOPMENT OF RAILWAYS

In view of the remarkable interest being displayed in China in regard to railway matters, it is of interest and value to record what is transpiring elsewhere, especially in countries where conditions are largely similar. The following article is from the *Rangoon Times:*

—If any justification were required for the proposition that a bold forward policy in the matter of railway development in this Empire is certain to yield a handsome return upon the outlay involved, it would be found in the remarkable results detailed by Sir T. R. Wynne in his statement to the Imperial Legislative Council. The figures are convincing enough even for the most sceptical, and show that judicious expenditure under this head always more than repays itself. Taking a period extending over sixteen years from 1896-97 to 1912-13, during the first eight years of this period of progress, receipts rose by 11 crores; during the second period they rose by 21½ crores or for the whole period by 32½ crores. This result is the best proof that could be put forward of the truth of the contention so often made in these columns that a policy of vigorous railway development in Burma would not only greatly advance the interests of the Province, but would yield splendid profits. In particular, the long-proposed project of a line connecting Burma with China—which is one of the most pressing of Provincial needs—ought to be brought out of the pigeonhole where it is becoming dust-covered, and reconsidered in the light of the facts and figures quoted by Sir T. R Wynne. We are very glad to see that the Chambers of Commerce of Manchester and Liverpool are about to bring pressure to bear upon the Secretary of State with that object, and we sincerely trust that they may be able to induce him to re-open the question, which has dropped out of view since Lord Curzon of Kedleston's suggestion that the merchants of Burma should provide the funds required for the construction of the proposed line. We entertain no doubt that the money would be forthcoming promptly if the Government of India followed the example set by the Dominion of Canada in offering land concessions along the route in return for the financial help required That such a railway is needed cannot be disputed, that it would pay well is equally certain; that its cost could be easily provided on suitable terms does not admit of doubt. The political difficulties in connection with the suggested line have undergone considerable modification within the last few years, and all that is now wanted is a bold policy on the part of the Railway Board.

The Burma Railways Company, Limited, is an enterprising concern and is under exceptionally able management, but it is hampered by the action of the Railway Board, which in its turn reflects the attitude of the Government of India We know that the Railway Board is alternately accused of extravagance and of parsimonious neglect, but the former is neither required nor desired in the case of this Province. The traffic returns of the Burma Railways last year bear eloquent and conclusive testimony to the advantages of a forward policy. The number of passengers carried on the main line and the Pegu-Moulmein and Henzada-Kyaungin extensions was 23,966,266, an increase of over two millions as compared with the previous year. The gross earnings rose to Rs. 211.76 lakhs and the working expenditure to Rs. 130.47 lakhs, leaving a net profit of Rs. 81.29 lakhs, an increase of 9½ lakhs on the figures for 1910-11. Both on the main line and on the extensions the percentage of expenses to earnings fell, and the percentage of earnings to capital outlay everywhere increased. Figures like these are very satisfactory in themselves and amply warrant the belief that if further extensions were undertaken—and especially if the construction of the through connection to China were placed in the hands of the Burma Railways Company—the financial and commercial benefit to this Province would be enormous.

There are, of course, other directions in which railway development is necessary in Burma, and it is gratifying to know that the matter is not being neglected, even if progress be slow. In the Tenasserim Division surveys have been sanctioned from Ye to Tavoy, from Tavoy to Amya *via* Myitta, from Moulmein to Three Pagodas, and from Ye to Three Pagodas. Then, also, considerable advance is being made in the construction work on the Southern Shan States Railway and if sufficient funds are forthcoming it is anticipated that the line will probably be opened up to Aungban at the 72nd mile in the spring of 1914. Reports on the projected Ta-Hapali-Nampai Nyaunglebin-Madauk and Nyaunglebin-Pado Railways were received last year, but it is not proposed to proceed with the projects at present. The Local Government recommended the construction of the Pyinmana-Myinbyin, and Alon-Saingbyin lines, reports for which were also received, but there is no early prospect of the Railway Board being able to provide the necessary funds. This is disheartening, but as we have said, if the Government of India will only be a little more liberal, and be not quite so grasping in wanting everything for itself and will consider the economic interests of investors, it can readily obtain all the money needed to inaugurate a vigorous policy of railway development.

MODERN PORT FOR SAKHALIN.

Mr. P. M. de Friedlander, the English capitalist, who is largely interested in East Siberian mining concessions and more particularly in coal mines and petroleum oil wells in the Russian section of Sakhalin, has received very welcome tidings that the Tsar has approved of certain plans submitted by him for the construction of a harbor at Alexandrovsk, on the northwestern coast of the island. Mr. de Friedlander was originally requested to prepare these plans by the Governor of Sakhalin and the Governor-General of the Priamurye, Master-of-the-horse Gondatti, and the actual work of drafting them was entrusted by him to Messrs. Hawkshaw and Dobson of Millbank House, London, who executed the task in a most efficient and elaborate manner. The plans were ready in 1911, but various formalities were necessary before they could be acted upon Following the Tsar's approval, they were submitted to a committee which was convened last summer during Governor-General Gondatti's visit to St. Petersburg and were duly accepted. Work on the new harbor will commence forthwith.

The importance of the projected enterprise from an economic standpoint can scarcely be exaggerated. The effect of creating an up-to-date port at Alexandrovsk will be to open up an almost fabulously rich coal bearing country in the hinterland, which in turn will revolutionize the entire coal trade of the Far East. Not only is the quantity of coal available enormous, and capable of being easily mined, but its quality has been recognized by experts as fully equal to the best Cardiff steam coal. Hitherto the business of mining this coal has been carried on in a very desultory manner, the absence of a harbor on the west coast and the consequent difficulty in shipment having constituted the most serious obstacle to successful development in the past. In the opinion of the British Consul at Vladivostok once these obstacles can be overcome by the construction of an artificial harbor, the industry should have a good future.

A great prospective market for the Sakhalin coal is the Maritime Province of East Siberia, which in 1910 imported 41,852 tons from China and 34,136 tons from Japan, the principal purchasers being the Government departments and the Ussuri Railway. It should be easy for this high-class Sakhalin coal to oust all foreign coals from the coals from the above market, and also to take the place for private and industrial use of local coal.

But the prospective market for Sakhalin coal, when the new harbor is ready, need not be restricted to Russian territory, for in the opinion of experts, it should be possible to lay down this coal at, say, Yokohama at a rate per ton considerably lower than that asked for Japanese coal which, moreover, is of decidedly inferior quality. Indeed the demand for Sakhalin coal hereafter from steamship companies doing business in these waters bids fair to be enormous.

Mr. de Friedlander states that the natural condition for a harbor at Alexandrovsk are in every respect excellent. The average depth of water at low tide is 47 feet, with a rise of about six feet at high tide. Mr. de Friedlander naturally feels gratified that his plans should have been given the preference over those of anybody else, and looks forward with confidence to the future progress of Russian Sakhalin in the wake of this important projected improvement.

THE IMPORTANCE OF THE MINING INDUSTRY TO CHINA

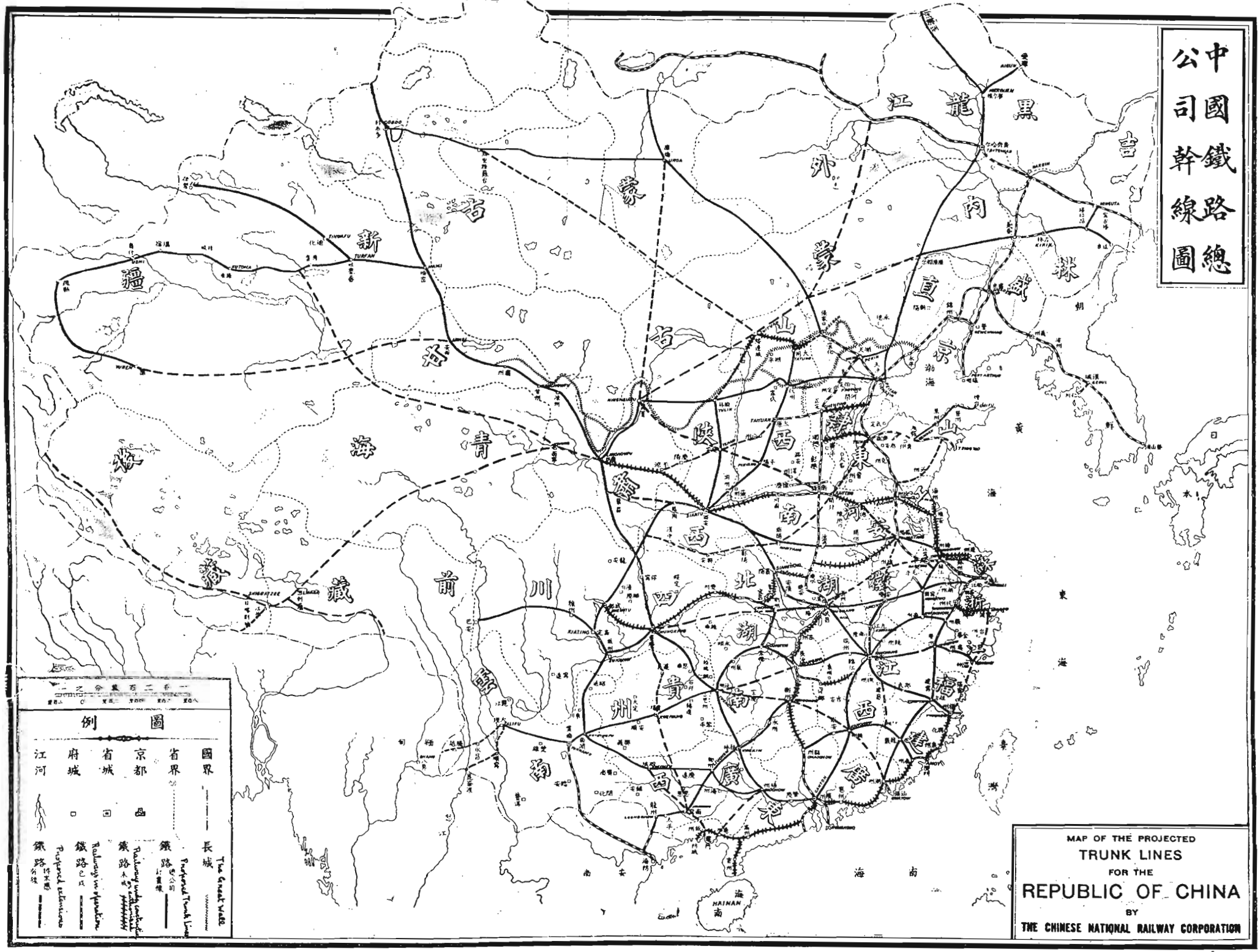
(*Continued from the previous page*)

In countries where the government gives investors much aid and information through their geological surveys, by building roads and giving similar assistance, investors will naturally be willing to pay higher royalties and taxes, as their contributions are indirectly spent for the benefit of the mining industry.

There is probably no country in the world to-day of which so little general and detailed information about its mineral resources is available as China and the present time is most opportune for the inauguration of a practical and business like geological survey which would have for its objects the study of the known mineral districts and the publication of results. In many cases the study of the occurrence of coal and oil would lead to the discovery of further deposits and to the great advantage of the country at large.

Furthermore, the great advantage to the country of the detailed topographic maps necessary for the study of its geology would be that these maps could be used for the purposes of irrigation, reclamation, railway and transportation routes, agricultural and forestry development, military and many other uses which would repay the government many times over for the original cost.

No one who has travelled in China but is impressed with the possibilities for its development, and no one who admires the Chinese doubts that they will achieve a stable government on modern lines. For the new government there is no work of greater benefit to the country than the intelligent promoting of the development of its mineral resources.


中國鐵路總公司幹線圖
MAP OF THE PROJECTED
TRUNK LINES
FOR THE
REPUBLIC OF CHINA
BY
THE CHINESE NATIONAL RAILWAY CORPORATION
圖例
國界
省界
京都
省城
府城
江河
長城
鐵路
鐵路
鐵路
鐵路
The Great Wall
Proposed Trunk Lines
Railways under construction
Railways in operation
Proposed extensions
黑龍江
吉林
內蒙
外蒙
古
新疆
青海
山東
山西
陝西
河南
安徽
湖北
湖南
江西
福建
廣東
廣西
貴州
雲南
四川
前藏
渤海
黃海
東海
南海
HAINAN

PEKING-MUKDEN RAILWAY

ANNUAL REPORT AND ACCOUNTS

General Report

Mr. Li Tsoi-chee, the Managing Director of the Peking-Mukden Line, has issued his report for 1912. He says:

The designation of the Railway has been changed. The old style of Imperial Railways of North China has given place to the new name of Chinese Government Railways, Peking-Mukden Line. So far, the change is principally one of name, for the administration of the Director continues, as before, and remains under the control of the Board of Posts and Communications in Peking.

From the beginning of the Revolution, and before the creation of a form of Republican Government, the country was in a chaotic state, and for a time railway operations were carried on only a great personal risk and danger. In consequence, the loss sustained by this line was considerable. After the historic change had been successfully made, and although order had been somewhat restored in the country, Manchuria was visited with famine, and inundations broke out in the Province of Chihli, resulting in a general depression of trade throughout this part of the country. The traffic was then so stagnant that all hope was almost given over of being able to bring the earnings to the usual figures of previous years, but thanks to the untiring efforts and energy of the entire staff, on the general revival of trade, an unprecedented result was obtained. Besides grain, the earnings from coal traffic and salt show most notable increases.

The traffic earnings for 1912 are the highest on record for this railway.

The results of the year's working are compared with those of the previous twelve months in the columns below:—

	1911	1912
	$	$
Earnings	11,668,627.89	13,183,638.51
Working Expenses	3,651,132.53	3,820,657.23
Balance after paying Working Expenses	8,017,495.36	9,362,981.28
Ratio of Working Expenses to Earnings	31.3%	28.9%

Mileage.—The mileage open to traffic is 605.76 miles.

Loans.—On 1st August, 1912, the Imperial Chinese Railways 5% Gold Loan of 1899 was reduced by the amount of the Eighth Drawing of £57,500 to £1,840,000.

The service of the Gold Loan of the South Manchuria Railway has also been duly met.

Exchange.—The monthly remittances to London in settlement of Loan service obligations were made at the average rate of 2/10⅝ per Tientsin Tael.

Staff.—At the close of a momentous year, the Director gladly avails himself of this opportunity to thank all grades of the staff for their loyal devotion to duty and hearty co-operation in the service.

Statement of Accounts for the Year Ended 31st December, 1912

No. 1 CAPITAL AUTHORISED AND CREATED

DETAILS	Capital Authorised			Capital Created		
	Stock and Shares	Loans	Total	Stock and Shares	Loans	Total
	$	$	$	$	$	$
Chinese Government and Chinese Shareholders	21,994,428.57	—	21,994,428.57	21,994,428.57	—	21,994,428.57
Under Loan Agreement 1899, £2,300,000	—	27,600,000.00	27,600,000.00	—	27,600,000.00	27,600,000.00
Under Japanese Loan Agreements South Manchuria Railway Loan, 1909 Gold Yen 320,000	—	377,142.86	377,142.86	—	377,142.86	377,142.86
	$21,994,428.57	27,977,142.86	49,971,571.43	21,994,428.57	27,977,142.86	49,971,571.43

No. 2 STOCK AND SHARE CAPITAL CREATED SHOWING PROPORTION ISSUED

	Amount Created	Amount Issued	Amount Unissued
	$	$	$
Chinese Government and Chinese Shareholders	21,994,428.57	21,994,428.57	—
	$21,994,428.57	21.994,428.57	—

No. 3 CAPITAL RAISED BY DEBENTURE STOCK

Chinese Government Peking-Mukden 5% Railway Loan formerly called Imperial Chinese 5% Railway Loan, 1899 (original amount of Loan £2,300,000).		$
Existing at 31st December, 1911	£ 1,897,500	22,770,000
Bonds of Eighth Drawing paid off	57.500	690,000
Existing at 31st December, 1912	£ 1,840,000	22,080,000
Of which there was invested in the Hongkong & Shanghai Bank, London, at 31st December, 1911	£ 85,251.0.9	1,023,012.48
Less Withdrawals	£ 40,255.5.4	483,063.20
Leaving invested in the Hongkong & Shanghai Bank, London, at 31st December, 1912	£ 44,995.15.5	$ 539,949.28

South Manchuria Railway Loan, 1909 (original amount of Loan G. Yen 320,000.00).

Existing at 31st December, 1912 . . . . . G. Yen 266,666.70

No. 4

RECEIPTS AND EXPENDITURE ON CAPITAL ACCOUNT

Dr.

To Expenditure	Total to 31st Dec. 1911	Amount expended in Year 1912	Total to 31st Dec. 1912
	$	$	$
Lines open for Traffic	47,245,485.01	1,221.46	47,246,706.47
Authorised by High Court of Chancery	1,849,711.38	538,677.80	2,388,389.18
New Steamer	336,475.78	—	336,475.78
	$49,431,672.17	539,899.26	49,971,571.43
Balance			Nil
			$49,971,571.43

Cr.

By Receipts	Total to 31st Dec. 1911	During Year 1912	Total to 31st Dec. 1912
	$	$	$
Shares	21,994,428.57	—	21,994,428.57
Debenture Stock	27,600,000.00	—	27,600,000.00
South Manchuria Rly. Loan	377,142.86	—	377,142.86
			$49,971,571.43

No. 5

DETAILS OF EXPENDITURE ON CAPITAL ACCOUNT

Rolling Stock	$413,274.94
Tongshan Works	47,140.04
Shanhaikwan Bridge Works.	6,351.44
New Head Office Buildings	5,127.83
Stations, Yards and Sidings	67,536.44
Bridges	468.57
	$539,899.26

No. 6

EXPENDITURE ON CAPITAL WORKS PAID FOR FROM REVENUE

Betterments.	
Buildings at Chien Yeng Men Station, Peking	26.607.92
Flood protection works in Hsin Min Fu district	65,729.74
Railway Extension to Mukden City	89,810.63
Locomotive Sheds	95,066.82
Staff Quarters	23,280.92
Miscellaneous	74,078.25
Expended during Current Year	374,574.28
Expended in Previous Years	8,983,970.27
	$9.358,544.55

No. 7 REVENUE ACCOUNT

Dr.

To Maintenance of Way, Works and Stations as per Abstract A. . . .	969,948.83	
To Locomotive, Carriage and Wagon Expenses as per Abstract B. . . .	1,796,162.04	
To Traffic Expenses as per Abstract D .	511,345.46	
To General Charges as per Abstract E .	543,200.90	
		3,820,657.23
To Balance carried to Net Revenue Account.		9,362,981.28
		$13,183,638.51

Cr.

By Earnings:	
Passengers	5,257,591.89
Goods	6,850,353.37
Military Traffic	77,921.59
Miscellaneous Receipts. . . .	665,957.03
Chinese Government Traffic . .	331,814.63
	$13,183,638.51

No. 8 NET REVENUE ACCOUNT

Dr.

To Debenture Loan, Eighth instalment repaid	690,000.00
To Debenture Loan, Interest . .	929,383.05
To Chinese Shares, Interest . .	3,360.59
To S.M.R. Loan, part capital repaid	18,222.21
To S.M.R. Loan, Interest . . .	14,355.16
To Paid to Chinese Government	6,320,263.31
To Shipping Department . . .	39,230.24
To Tongshan College, Upkeep .	72,328.72
To Bonus to Employees . . .	182,107.51
To Betterments, being amount taken from Revenue for Capital Works	374,574.28
To Extraordinary repairs . . .	84,751.91
To Balance	6,111,646.42
	$14,840,223.40

Cr.

By Balance forward from last year	5,477,242.12
By Balance transferred from Revenue Account	9,362,981.28
	$14,840,223.40

No. 9 GENERAL BALANCE SHEET

Dr.

Capital Account, Balance per No. 4		Nil
Salaries and Wages due . . .		165,693.94
Sundry Creditors		86,698.45
B.R.A. Balance taken over . . .		3,293,107.44
Net Revenue A/c. Balance at Credit per No. 8		6,111,646.42
		$9,657,146.25

Cr.

Hongkong and Shanghai Bank, London		
Loan Funds, on Deposit Receipt . £30,000.		
Loan Funds, on Current Account .	14,995.15.5	539,949.28
Revenue Funds, on Deposit Rect . .	35,000.	
Revenue Funds, on Current Account "A"	33,465.16.9	821,509.04
To meet repayment of Loan Capital .		229,716.47
Cash with foreign Banks in China		
On Deposit Receipt	$1,495,714.29	
On Current Account	1,283,548.89	2,779,263.18
Cash on hand in Head Office . .		280,769.80
Stores		2,847,320.49
Investments		1,190,289.09
Traffic Accounts due to the Railway		670,219.48
Other Accounts due to the Railway		166,075.09
Accounts due by other Railways .		122,953.33
		$9,657,146.25

Wm. Henderson, C.A.,
Chief Accountant.

ABSTRACTS

A. Maintenance of Way, Works and Stations.

Year ending 31st December, 1912		Year ending 31st December, 1911
	Salaries, Office Expenses and General Superintendence	
166,596.97		191,683.94
	Maintenance and Renewal of Permanent Way:—	
	Wages	
323,153.13		329,974.67
	Materials	
326,710.27	283,969.40	
649,863.40		613,944.07
	Repairs of Bridges.	
	Wages	
16,146.02	13,432.65	
	Materials	
25,881.54	20,197.26	
42,027.56		33,629.91
	Repairs of Stations and Buildings.	
111,460.90		90,763.63
$969,948.83		$930,021.55

B. & C. *Locomotive Power and Rolling Stock Repairs.*

Year ending 31st December, 1912		Year ending 31st December, 1911
	Salaries, Office Expenses and General Superintendence	
156,333.38		157,039.29
	Running Expenses.	
	Wages connected with working Locomotive Engines	
164,579.43	153,001.77	
	Coal	
476,790.53	438,469.72	
	Water	
52,473.05	46,070.46	
	Oil, Tallow and other Stores	
77,741.39	66,342.09	
771,584.40		703,884.04
	Maintenance and Renewal of Locomotives and Machinery:—	
	Wages	
341,583.45	311,673.83	
	Materials	
132,528.76	99,723.04	
474,112.21		411,396.87
	Repairs and Renewals of Cars:—	
	COACHING VEHICLES:	
	Wages	
94,403.73	81,297.64	
	Materials	
58,631.95	59,124.33	
153,035.68		140,421.97
	GOODS VEHICLES:	
	Wages	
94,374.82	71,136.66	
	Materials	
90,154.43	91,868.81	
184,529.25		163,005.47
	Cleaning Carriages and Oiling	
44,612.68		42,004.48
1,784,207.60		1,617,752.12
	Steam Ferry at Newchwang	
11,954.44		11,338.51
$1,796,162.04		$1,629,090.63

D. Traffic Expenses.

Year ending 31st December, 1912		Year ending 31st December, 1911
$		$
97,732.01	General Superintendence	95,290.60
252,402.86	Wages of Station Staff	223,268.12
74,043.76	Wages of Train Staff .	62,180.45
77,218.85	Lighting and Small Stores	57,836.35
.12	Wagon Covers, Ropes, etc.	26.89
9,947.86	Station Fittings and Furniture	7,022.85
511,345.46		445,625.26

E. General Charges.

Year ending 31st December, 1912		Year ending 31st December, 1911
$		$
Cr.		Cr.
254,226.56	General Superintendence	250,502.31
70,610.56	Accountant's Department	68,106.66
79,775.01	Stores Department . .	77,064.89
42,399.97	Medical Department . .	100,957.40
6,261.95	Rents of Buildings and Lands	11,287.52
97,949.40	Police	111,765.52
156,564.69	Telegraph Department .	151,989.01
80,687.65	Stationery and Printing	58,157.73
4,031.19	Compensation	3,874.42
58,434.96	Sundries	35,630.47
850,941.94		869,345.23
307,741.04	Cr. Interest, &c.	222,950.14
543,200.90		646,395.09

Earnings.

Year ending 31st December, 1912		Year ending 31st December, 1911
$		$
5,257,591.89	Passengers . . .	4,336,907.08
6,850,353.37	Goods	5,931,056.62
77,921.59	Military Traffic . .	53,092.51
665,957.03	Miscellaneous Receipts	399,094.18
331,814.63	Chinese Government Traffic	948,387.50
13,183,638.51		11,668,627.89

Report on Permanent Way Department

Miles of Main Line Track		605.760 Miles.
Miles of Sidings, permanent . .	150.662	
temporary . .	8.312	
	Total	158.974 „
Increase of Main Line		nil. „
Increase of Sidings, permanent	3.018	
temporary . .	0.532	
	Total	3.550 „

New sleepers put in for maintenance

(a) 8 ft. sleepers	221,567.
(b) Crossing timbers	2,601.

Rails changed.

128	Old section 60 lbs. broken or defective			
19	New section, 60 lbs.	„	„	„
11	Standard 85 lbs.	„	„	„
1	85 lbs. Hanyang	„	„	„
1	Japanese 60 lbs.	„	„	„

385 ft. of old section 60 lb. track replaced by new section 60 lb.

550 ft. of worn 85 lb. track relaid with new 85 lb.

Fangs of ballast used for maintenance	16,139
Fangs of ballast used for new work .	8,356
Floor ties renewed	4,776

Probable renewals for next year.

(a) 8 ft. sleepers	266,000
(b) Crossing timbers . . .	3,960
(c) Floor ties	7,100

CHINESE GOVERNMENT RAILWAYS
PEKING-MUKDEN LINE.
AND CONNECTIONS
PEKING
Kalgan Line
Te-sheng Men
An-ting Men
Shichih Men
Tung-chih Men
Pingtze Men
Ch'i-hua Men
Hsi-pien Men
Tung-pien Men
Peking-Hankow Ry. Station
Peking-Mukden Ry. Station
Changyi Men
Kung-ting Men
Nan-hsi Men
Peking-Mukden Line
Ching-tso Men
Sharamuren or Huang Ho
Mongolian Plateau
To Harbin
(CHANGCHUN)
South Manchuria Railway
Changtufu
Fakumen
Coal
Chaoyangfu
HSINMINFU
MUKDEN
Fushun
KOUPANGTZU
LIAOYANG
Chinchoufu
NEWCHWANG
YINGKOU
Weichiakou
Tienchuangtai
Liao Ho
Lienshan
Ningyuanchow
GULF OF LIAO-TUNG
Fenghwangcheng
Antung
Wiju
Korean Railway
Chungchuan
Chinwangtao
Peitaiho
SHANHAIKUAN
Tangho
Chienso
Chienwei
Linshouying
Kalgan
Hsuanhoafu
Peking Kalgan Railway
Chang-ping-chow
Nankow
Shaho
Chinho
PEKING
TUNGCHOU
Yungtingmen
Fengtai
Huangtsun
Anting
Wanchuang
Langfang
Laofu
Changchuang
Yangtsun
Peitsang
TIENTSIN
Chunliangcheng
Hsinho
Chating
Peitang
TANGKU
Taku
Lutai
Hanku
Tienchuang
Tangfang
Hsukochuang
Tangshan
Kaiping
Leichuang
Lanchow
Shihmen
Chochow
Yichow
Peking-Hankow Railway
Paotingfu
To Pukow
Tientsin-Pukow Railway
The Great Wall
Luan Ho
GULF OF PECHILI
Chengtehfu (Jehol)
Port Arthur
Dairen (Dalny)
Fuchowking
Manchuria Railway

In connection with track renewals it is to be remembered that our track is laid with 85 lb. rails from Peking to Tongshan and from thence to Mukden and Yinkow we only have 60 lb. rails. This difference in weight and strength of rail on the main line causes serious difficulties in the economical working of our traffic, chiefly in restricting the weight of through trains to the capacity of the engines on the light rail. It also limits our car axle load for the whole line and it also seriously interferes with schemes for heating our trains from the locomotives.

It is therefore strongly recommended that the line between Tongshan and Mukden be relaid with 85lb. rails at an early date, and that the first section of 95 miles between Tongshan and Shan-hai-kuan be undertaken next year—1913.

New bridges completed:—

Bridge No. 141.—One concrete pier built to replace the old one which was blown up and 2 new girders erected to replace damaged ones.

Bridge No. 275.—One span added and bridge converted into a reinforced slab top.

Bridge No. 58 (Hsinminfu line) 17 spans of 30 ft.

Bridge No. 61 (do.) 2—20 ft. spans added.

Bridge No. 61a (do.) 2—20 ft. spans.

Fangs of rubble used for protective work . . . . . 12,825 fangs

Probable extra Bridge Work, etc., necessary to cope with floods.

Re-forming and pitching part of bank and raising part of track between Yangtsun and Lofah . . . . . .

Bridge No. 52. Converting timber piers to concrete . . . . . .

Liu Ho dams, probable extension . . . . .

Fangs of Earthwork executed.

(a) New Work—152,869 fangs (including 113,114 fangs Mukden City extension).
(b) Repairs 93,200 fangs.

Platforms extended.

None, but Tientsin East down platform had 980 feet wall built to make both sides available.

New Buildings erected.

Chienmen (Peking), Chinese Post Office (2 stories)	sq. ft.	5,856
Tientsin, New Engine Shed including Loco. office, etc.	„	28,038
Chang-kui-chuang, Station building	„	914
Tong-shan Works, Timber drying shed	„	4,000
Tong-shan Works, Painting shop extension	„	9,540
Kaiping, U. S. Army barracks . .	„	2,203
Wa-li, U. S. „ „ . .	„	1,919
Tang-ho, Engine shed and rooms for drivers	„	2,309
Shan-hai-kuan Bridge Works, carpenters' shop	„	2,460
Huang-ku-tun, Engine shed extension and accessory buildings .	„	10,077
Total sq. ft. of various buildings and quarters erected and extensions made along the line .	„	24,120
	Total sq. ft.	91,436

Signals erected.

Tientsin, Dwarf semaphore.
Tang-ho, Standard semaphore for Chinwangtao branch.
Chienso, 1 Reinforced concrete signal post.
Chu-liu-ho, 4 „ „ „ „

Quarry opened.

Small quarry opened at Shuang-yang-tien and siding laid to it.

Heavy works executed.

Bridge No. 106 (Yang-ho) 350 ft spur built and pitched with waste ashlar and rubble on willow mattresses.

Tientsin, New Engine Shed for 18 engines with necessary tracks, coaling and watering arrangements and yard. Shed is rectangular and has six tracks.

Near Ning-yuan-chow, Pitched dam round village at 113.75 mile.

Between bridges Nos. 222 and 223. Training dam and raising river bank near No. 222 bridge.

Bridge No. 264. Three training spurs.
Chin-chow, new station approach road.
Bridge No. 275. I span added.
New bridge No. 58 at Chu-liu-ho built and old No. 58 bridge filled up.
Chin-chow and Yinkow, new roof on engine sheds.
Liu Ho, 46,475 lin. ft. of dams built.
Bridge No. 141, Repairs.
Huang-ku-tun, Engine shed extended 186 ft. 2 tracks with heating and all accessories.
Bridge No. 61, extended 2 spans of 20 ft. (M. D. line).
Bridge 61a, 5 spans of 20 ft. built.
Mukden City yard. Earthwork filling.

Foreshore protection.

Siku river bank repaired and pitched for about 1,000 ft.
Yinkow, 367.41 fangs of rubble used.

Wharfage.—Nothing new, but 19,000 sq. ft. of decking renewed on Tongku Wharf.

Painting executed for maintenance.

115 Bridges painted.
Tientsin, Tongshan and Pei-tai-ho Overbridges.
Tientsin Central Station Subway.
Tangho Turntable.
Yinkow ferry boat and pontoons.
Staff quarters (about 30) painted.
Shan-hai-kuan station buildings.
Sar-hou-sou, Ning-yuan-chow, Lien-shan and Chin-chow station roofs and water tanks.
All signal posts, notice, nameboards, etc.

Mr. Li Tsoi-chee, Managing Director, Peking-Mukden Line

Water supply works.

Tientsin, New main to tank and hydrant at East end, 570 ft. 4" and 485 ft. of 1¼" pipe.
New Loco. shed and yard. One 5,600 gall. tank, one 4,300 gall. tank, one water crane, 110 ft. of 8" pipe, 562 ft. of 3", 35 ft. of 2" and 20 ft. of 1".
Carriage washing hydrant, 460 ft. of 2" pipe.
Hsü-ko-chung, New steam pump and 180 ft. of 4" pipe.
Chang-li. Pipe connection made to admit pumping direct from Yin-ma-ho to subsidiary tank at Chang-li station.
Hsiao-ling-ho (near Chinchow) New pump foundations built.
Kao-pan-tze, 1 new 6" borehole added.

Works in progress.

Tientsin Engine shed and turntable completion. Sidings at East end of station.
Mukden City Yard. Earthwork filling.

Accidents during the year.

Employees killed . .	6	Injured . .	0
Passengers killed . .	17.	Injured . .	24
Trespassers killed . .	49.	Injured . .	25
Passengers drowned .	1.		
Collisions while shunting in station yards .			5
Engine and Car derailments in station yards			80
Train derailed bet. Lei-chuang and Lan-chow during Lanchow uprising . . .			1
Engine derailed on Chang-li weir during flood			1
Train separated			4
Train on fire			3
Bridges blown up			2

On February 3rd, No. 73 train was wrecked at No. 141 bridge, 11 passengers were killed and many injured. The girders of the Bridge were evidently blown up by dynamite, one span was practically destroyed and another so badly damaged that it had to be changed.

On Sept. 15th the rails and girders of No. 51 bridge, on the Hsinminfu line, were damaged by explosion, a piece of rail 4 ft. long was blown away some distance, and the up flange of girder badly bent. The damage was not discovered and No. 74 train passed over without either engine or cars being derailed, after which the bridge was repaired.

Rainfall and floods.

General rainfall averaged 25.30 inches, but at Fengtai 6.75 inches fell in 10 hours on May 17.

10.00 inches rainfall averaged 28 hours on July 5 and 6.

9.25 inches rainfall averaged 50 hours on July 21, 22 and 23. There was no serious damage done by floods on the Railway excepting between Tientsin and Peking.

At the end of July the three rivers Lung Ho, Feng Ho and Pei-Ho crossing the line between Yangtsun and Lofa were all in heavy flood and broke their banks. At the same time the Hun Ho, running roughly parallel to the line, broke its bank and swelled the Lung Ho and Feng Ho. The country between Tientsin Central and Lo-fa was practically all under water.

Water was flowing over rail to a depth of two inches for a half mile and over the ballast for another mile but was prevented from cutting out the bank. On July 31st when the flood was about at its highest a strong gale got up and a similar state of affairs occurred a few days later. These two gales did a great amount of damage to the pitched bank between Yang-tsun and Chang-chuang, but stone was obtained in time and thrown down to prevent the track being undermined. The flood was the highest experienced at this part of the line since it was built in 1896.

Bridge Works, Shanhaikuan

The tonnage of Work turned out was as follows:—

Girders:—

3.	50 ft.	Clear Deck Spans	Tons	63.	0.	0.	0
35.	45 ft.	„ „ „		513.	7.	2.	1
9.	30 ft.	„ „ „		73.	9.	3.	27
1.	20 ft.	„ „ „		4.	1.	0.	24
6.	20 ft.	„ Differdange		10.	10.	0.	23
			Total tons	673.	17.	3.	10

Special Work, Tanks, etc.:—

1.	10'×7'×8' Water tank	Tons	2.	13.	0.	8
8.	4'×4'×2' Steel oil tanks for K. P. T. Workship . . .		2.	11.	0.	24
8.	4'×4'×4' Steel oil tanks for K. P. T. Workship . . .		3.	14.	0.	0
2.	8'×4'×4' Steel oil tanks for K. P. T. Workship . . .		1.	13.	1.	0
1.	247'×30' Steel Octroi shed erected at C. M. station . . .		43.	11.	3.	4
2.	55 0" Steel engine turntables, one for Tung-Pu Railway and one for T. S. new engine shed		45.	5.	3.	4
		Total tons	99.	9.	0.	27

Miscellaneous:—

Ironwork to the extent of	Tons	74.	4.	0.	0
Total Tonnage of Ironwork done	Tons	847.	11.	0.	18

Foundry:

The Foundry has been fully employed upon castings for points and crossings, signal post fittings and turntable centres and miscellaneous castings for maintenance and construction. Iron castings to the extent of	Tons	119.	16.	1.	20
Brass castings to the extent of		1.	14.	2.	13
	Total tons	121.	11.	0.	5

New Machinery erected:—

One new sliding, surfacing and screw cutting gap bed Lathe, 11" centre×18" gap bed, erected in Fitting Shop.

General Report of Work Carried out by Locomotive and Carriage Works.

Locomotives.—General overhaul 47; Repaired at Kao-Pan-Tze 15; New boilers constructed for renewals 6; New boilers under construction 9; New fireboxes put in 8; Half sides put in 16; New firebox tube plates 13; New tube plates smoke box 2; New back plates put in 4; New sets of tubes put in 23; Boilers withdrawn from service 10; Tenders repaired at Tongshan Works 38; Tenders repaired at Kao-Pan-Tze 13.

Steamer.—Ferry boat, s.s. "Liaotung" engines and boilers overhauled.

Coach and Car Repairs.—At Tongshan Works, 1,253 Freight, 125 Passenger, and 18 Brake Vans were sent in for repairs.

At Kaopantze Works, 776 Freight, 60 Passenger and 36 Brake Vans were repaired. At the Running sheds 12,138 minor repairs were effected to Cars, and Axle Boxes of 22,865 cars were repacked.

Rolling Stock Completed.

Passenger stock.—First class Drawing room cars, 5; First class Sleepers 3; First class Diner 1; Second class Sleeper 1.

Freight stock.—20-ton Covered Goods, 50; 30-ton High side 50; 24-ton High side (mounted on old spare bogies) 15.

Rolling Stock Under Construction

Passenger stock.—First class, 6; Postal vans, 4; Kitchen car, 1, First class Sleeper, 1; Kitchen and 2nd Diner, 1.

Locomotives.—19" Moguls 6.

Tenders.—Eight wheel Bogie Tenders 4.

Improvement to Rolling Stock.

Freight stock.—Wagons fitted with Coupler locking pins lifting gear 9; Wagons converted from 20-ton to 24-ton High side 8; 30-ton freight cars 6' doors altered to 4 ½' 132.

Passenger stock.—Coaches fitted with Electric light 3; Coaches fitted with Westinghouse air Brake equipment 2; Coaches (3rd class) fitted with seats and baggage racks 7; Coaches (2nd class) fitted with piping for steam heating 2; Coaches (1st class) fitted with new type of berth 2; Coach (1st class) fitted with Stones Louvre ventilators 1; Coach (1st class) fitted with Buffet 1; Coach (private car) fitted with double roof 1; Coach (private car) rebuilt 1; Coach frames fitted with new ends, end platforms enclosed, and vestibules fitted 3; Baggage and Brake vans mail compartments added, and vans newly equipped with Engine Dynamo battery 2.

Engines, Tenders.—Fitted with Westinghouse air Brakes 3; Fitted with Westinghouse Train heating apparatus 19.

Rolling Stock Withdrawn from Service

Condemned.—Private car 1; Brake Van 1; 20-ton pony cars 3; 20-ton Covered Goods 1.

Wrecked at Bridge 141. O. W.—10-ton Coal car 1; 12-ton Coal cars 3; 20-ton Pony cars 2; 24-ton High side 1; 30-ton Covered Goods 1; 20-ton High side 1; Eight wheel Bogie tender 1.

Sold to Foreign Lines.—Engine No. 21, 1; Tender No. 53, 1.

Rolling Stock Completed for other Railways

Kirin Railway.—17" cylinder mogul Locomotive 2-6-0 type 17"×24" Drivers 4' 6" 1; Bogie tender 1.

New Rolling Stock now in Progress of Construction for Foreign Lines and Others

Kalgan Railway.—30-ton High side cars 120; 10-ton Coal cars 20; 4 wheel Brake vans 5.

Tao-Ching Railway.—30-ton High side cars. (Steel Bodies and frames) main parts of Bogies supplied by Tao-Ching Railway 100.

Asiatic Petroleum Co.—30-ton Oil tanks 7.

Varnishing and Painting.—Locomotives 25; Tenders 18; Coaches 72; Brake vans 22; Freight 1265.

Foundry Output.—Iron Castings 490.5 tons; Brass Castings 56 tons.

Average Number of Employees.

	1911	1912
Tongshan Works	2,190	2,568
Kao Pan Tze Shops	291	326
Locomotive sheds	1,571	1,614
Total	4,052	4,508

Rolling Stock Equipment at 31st December 1912

	No. of Veh.	Ton.	Axles.
Freight Stock.			
10 Ton Capacity:—			
Power Vans	6	60	
Coal Cars	271	2710	
Water Tanks	7	70	
Pig Cars	7	70	
12 Ton Capacity:—			
Coal Cars	469	5628	
Pony Cars	38	456	
15 Ton Capacity:—			
Ballast Cars	29	435	
20 Ton Capacity:			
Flat Cars	74	1480	
Ballast Cars	258	5160	
High Sided	816	16320	
Covered Goods	107	2140	
24 Ton Capacity:—			
Flat Cars	1	24	
Ballast Cars	16	384	
High Sided	156	3744	
30 Ton Capacity:—			
Ballast Cars	38	1140	
High Sided	462	13860	
Covered Goods	165	4950	
Water Tanks	3	90	
Oil Tanks	40	1470	
Timber	2	60	
Total Cars	2,974	60,251	
Passenger Stock.			
Imperial	3		12
State	3		12
Private	13		40
Directors	1		4
1st Class	28		112
2nd Class	39		156
3rd Class	100		400
Composite	17		68
Ordinary Buffet	7		28
Kitchen	1		4
Train de Luxe Equipment			
1st Class Buffet	3		12
2nd Class Buffet	2		8
1st Class Sleepers	5		20
2nd Class Sleepers	3		12
1st Class Saloon	2		8
2nd Class Saloon	2		8
Heating and Lighting	4		16
Baggage and Brake	5		20
Brake Vans.			
4 Wheel	49		98
8 Wheel	15		60
Total Cars	302		1,008
Miscellaneous.			
Wrecking Cars	9		—

Engines

Passenger class:—				
4—4—0	Cylinder	17" × 24"	4	
4—4—0	Cylinder	19" × 24"	3	
4—6—0	Cylinder	18" × 24"	13	
				20
Freight class:				
2—6—0	Cylinder	17" × 24"	43	
2—6—0	Cylinder	19" × 24"	14	
2—6—0	Cylinder	16" × 24"	27	
				84
Shunters:—				
2—6—2	Cylinder	14" × 24"	13	
0—6—0	Cylinder	16" × 24"	4	
2—6—4	Cylinder	17" × 24"	2	
				19
Total Engines				128

Tenders

4 Wheel	3
8 Wheel	83
6 Wheel	26
Total Tenders	112

Comparative Table of Rolling Stock

	1911	1912
Passenger Cars and Brake Vans	294	302
No. of Axles	1068	1098
Freight wagons of all classes	2868	2974
Tonnage capacity	57831	60555
Locomotives of all classes	124	123
Weight in Tons	5667	

Note:—Four Freight cars added to list hitherto not on register.

New Machinery Erected

Locomotive and Car Works:—Reserve steam Engine and Dynamo for Electric power house; Pneumatic moulding machine for Foundry; Block for the manufacture of pressed steel Bogies; Pneumatic plant and piping for car bogie and frame rivetting; Two sliding, surfacing and screw cutting lathes; One Bolt screwing and nut tapping machine; Two wood trimmers, and saw sharpener; One mortising and Boring machine.

General.—Vertical Boiler 4' 9" Dia. × 12' made for K. P. E. shops; All shops Tongshan works whitewashed; Erecting and Boiler Shops repainted; Timber columns of Loco Works Smith shop replaced by steel columns; Depth of South well increased by 15'.

Remarks.—Owing to the unsettled state of the country early in the year, and the large number of unemployed Southerners in Tongshan in poor circumstances, who showed no signs of moving to other places owing among other reasons to there being no or very little demand for labour anywhere in China, it was decided to re-engage these men in the railway works and so avoid the risks of local disturbance. To find these superflous hands work, six 19" mogul engines were put in hand with what material was in stock. Boiler tube fencing, electric light standards, and other work not calling for any great degree of skill were undertaken.

Delay was caused to a lot of work put in hand during the year, owing to the unusual length of time taken to fill indents calling for material from England attributable to the succession of strikes in that country.

As regards locomotives the six mentioned above were put in hand two of which are to be fitted with the Phœnix superheater. Owing to the delay in receiving material, it is improbable the first of these will be on the rails before June, the others following at intervals of a month. A shunting engine in every possible respect similar to the standard light mogul engine was ordered from the North British Locomotive Co. It is hoped that this engine may be adopted as the standard heavy shunter required by the line. The fitting of train engines and 74 class with train heating gear was proceeded with, so before long the boilers carried for this purpose in the Brake vans may be dispensed with and the space utilized for baggage.

Want of power was felt during the exceptionally heavy traffic in the autumn.

The boilers of 58 and 74 class and those of six engines of 15 class will now have to be renewed, as these engines pass through the Shops and provision is being made for this. Boiler renewal and spares will keep the Boiler Shop constantly employed during the next three or four years.

With reference to coaches it having been decided to improve the express between Peking and Tientsin, six third class coaches with teak bodies, battened seats, Westinghouse heating, and Electric light were put in hand. The mail between P. K. and S. H. K, to be improved by seven improved oregon bodies being fitted to third class coaches provided with Westinghouse heating gear and Electric light. These cars to replace those of old design now in service.

Improved electric light fittings for coaches are being introduced.

As regards freight stock construction, little of this work was undertaken. Pressed Steel bogies were successfully manufactured during the year, but have not yet gone into service. The design of frame and body of 30-ton cars was made similar to the cars supplied the Tsin-Pu Railway N.S. from Europe.

A Valiant type of fire engine similar to many in use in English railway Shops was obtained for the protection of the Works.

A pneumatic plant for coach and car frame rivetting and any bogie rivetting necessary, is now being put down in the car works. This it is hoped will reduce costs of work.

The machinery and boilers of the ferry boat "Liaotung" were overhauled, and the necessary repairs and renewals effected.

A tank Locomotive for the Hulutao Harbour Works was erected for them by Kao-Pan-Tze Shops.

TRAFFIC DEPARTMENT.

Train miles run for Revenue. . .	2,273,243
Train miles run for Construction and Maintenance	83,862
Number of Passengers carried . .	3,405,707
Number of Tons of Freight carried	3,450,393
Passenger Mileage	217,554,096
Ton Mileage.	299,419,493
Total "Passenger Ton" Mileage.	570,974,489
Average number of men employed under Traffic Manager including Police Force about 1,131 . . .	2,836

TELEGRAPH DEPARTMENT.

Length of Wires.—Tungchow and Tungchow Junction, Miles 16.65. Chienmen and Yingkow (Double Wires) 1043.50. Tientsin and Shanhaikwan (Single Wire) 175.54. Koupangtzu and Fengtien (Double Wires). 214.50. Hsinminfu and Fengtien (Single Wire) 37.37. Tientsin City and Hsiku 4.00. Tientsin Central and Tientsin East (Six Wires) 16.26. Tientsin and Tongku (Telephone) 27.00. Fengtai and Loukouchiao 3.85. Total miles 1538.67.

Electric Staff Wires.—Chienmen and Fengtien and Yingkow, Miles 521.75. Number of Messages sent, Service 188,484. Number of Messages sent, Outside 5,146. Total 193,630. Average Number of Employees 371. Number of Telegraph Stations, 77. Number of Recorders in use 123. Number of Electric Staff Stations 70. Number of Electric Staff and Tablet Apparatus, 138.

EASTERN EXTENSION, ETC., TELEGRAPH COMPANY

The seventy-ninth half-yearly ordinary general meeting of the Eastern Extension, Australasia and China Telegraph Company, Limited, was held under the presidency of Sir John Wolfe Barry, K.C.B. The general manager and secretary (Mr. F. E. Hesse) having read the notice convening the meeting and the auditors' report,

The Chairman said: The gross receipts for the half-year to Dec. 30 amounted, in round numbers, to £379,000, against £359,000 for the corresponding period of 1911, showing an increase of £20,000. Nearly £4,000 of this increase was derived from additional reserve fund investments, and the remainder (£16,000) was due to growth of traffic spread over the whole of the company's system. The working and other expenses amounted, in round numbers, to £154,000, against £150,000 for the corresponding period of 1911, showing a decrease

Head Office, Chinese Government Railways, Tientsin.

of £5,000, partly due to the expenses attending maintenance of cables having been nearly £2,000 less last year than in 1911, and partly to the general expenses of stations having been debited in 1911 with the cost of new relay and other apparatus, for which there is no corresponding item in the accounts for the past half-year. Comparing the figures for the whole year, the following satisfactory results are seen: The gross revenue for 1912 amounted to £747,000, against £680,000 for 1911, showing an increase of $58,000, while the gross expenditure for the past year was within a few hundred pounds of the expenditure for 1911. The net profit for the past half-year was roundly £206,000, and after adding £56,000 brought forward from the previous half-year, there remained an available balance of over £262,000. The usual quarterly interim dividends of 2s. 6d per share were paid during the past year, and it is now proposed to distribute a like amount to-morrow, making a total dividend of 5 per cent. for the year. It is also proposed to pay a bonus of 4s. per share, or 2 per cent., making a total distribution of 7 per cent. for 1912. After making the usual additions to the maintenance, ships', insurance, and depreciation funds, £100,000 of the revenue balance has been transferred to the general reserve fund, making, with the contribution of £75,000 for the previous six months, a total addition to that fund for 1912 of £175,000; against £125,000 for 1911. On the other hand, the general reserve fund has been debited with £50,000, as a further provision on account of investment fluctuations, making a total provision against depreciation of £200,000, which was practically the amount of depreciation on Dec. 31 last, when the printed accounts were made up. Since that date, however, the depreciation, unfortunately, has further increased by about £7,000, which will be dealt with during the current year.

THE NEW CABLES TO THE FAR EAST.

The general reserve fund has also been debited with £86,700, the amount expended up to the end of last year in connection with the manufacture and laying of the first section of the new cables between Colombo, Penang, Singapore, and Hongkong, to which I referred when I last had the pleasure of addressing the shareholders. The cable which the Eastern Telegraph Company have arranged to lay between Aden and Colombo to connect with our new cables will probably be completed towards the end of the current year, and our further sections between Penang and Hongkong are expected to be laid and opened for traffic in the early part of 1914. The cost of our new cables will amount to about £750,000, which will be charged against the general reserve fund. The revenue balance carried forward for 1912 amounts to £27,000, against £23,000 carried forward in 1911.

GOTO ISLAND CORAL INDUSTRY.

In connection with the Goto Island coral industry, an official of the Nagasaki Kencho who recently visited the island is quoted as stating that 469 boats have their base at Tomiye, Goto Islands, and are registered there, but the number actually engaged exceeds 700.

The value of the season's catch last year was Yen 375,000, while that for May alone of this year amounts to yen 300,000. A high figure is expected to be reached this season in consequence, although it must be said that May is always the best month. This improvement is attributed to the fact that, whereas formerly a boat carried only one net, now each occupant of the boat has a net of an improved description. The boats now in use cost about yen 700 each and the annual upkeep, including nets, of each boat, is estimated at yen 300.

The future of the coral fishing industry in Japan is looked upon with pessimism by some people in view of the large number of boats now operated, but judging from the experience of Italy, off the coasts of which coral has been regularly sought for 500 years and there is still a good yield, Japan which has for only half a century exploited this source of wealth should have a bright prospect before it. As beds are worked out so new ones must be sought and there is every reason to believe that they can be found.

CHINESE NAVAL DISTRICTS

In order properly to guard the coast line, the Board of Navy have divided the coast into three Naval Districts. In each of the Districts, a District Headquarters will be established. They are as follow:—The Northern Naval District, extends from the Yalu River to Chefoo and the mouth of the Pei-ho. The District Headquarters is to be at Chinwangtao. The Central Naval District is to extend from Chefoo to Santuao, Fukien, and the Headquarters is to be at Chungmin Island. The Southern District starts from Santuao to the Chu-kiang, or Pearl River of Kwangtung, and the Headquarters is to be at Ki'ungchowfu.

SHANGHAI-NANKING RAILWAY

ANNUAL REPORT AND ACCOUNTS

Mr. M. Y. Chung, Managing-Director of the Shanghai-Nanking Railway, in presenting the annual report and accounts, writes:—The Annual Accounts and the Departmental Reports for the calendar year of 1912, which I have much pleasure in submitting herewith, will be read, it is believed, with gratification.

The material progress made in the operation of this Railway is modestly set forth by the Genaeral Manager in his report. The tabulated statement given in it shows, at a glance, the steady yearly increase in the amount of Net Earnings since the Open Line working began in 1908; while the indirect benefits and improvements, which the country served by the Line has begun to enjoy are also briefly noticed.

The working of the Line and the results obtained during the period under review are discussed in greater detail in the several reports by the Chief Accountant and the other Heads of Departments, which will be found to contain much matter of technical and general interest.

The capacity of the Line has been taxed to its extreme limit, it would seem, during the whole year with a slight slackening only during the hot season. Due acknowledgment should, therefore, be made, as remarked by the General Manager in his concluding paragraph of the very good work performed by all the officers and employees of the Line, Chinese and Foreign, including the General Manager himself, under somewhat trying conditions, owing to the necessity of handling the enormously increased passenger and goods traffic, including the movement of large bodies of troops and paraphernalia from time to time, without a corresponding increase of rolling-stock and adequate equipment to meet the ever growing demands upon the Line.

The result of the year's work, therefore, must be considered gratifying; and as there is good prospect of securing additional rolling-stock in the not distant future, the General Manager's hope as to the Line earning its guaranteed interest may be realized by the end of the current year.

REPORT BY THE GENERAL MANAGER

The report of the General Manager, Mr. A. W. U. Pope, C.I.E., is as follows:—The Annual Accounts for the Calendar year 1912, are herewith submitted. Comment is frequently made regarding the loss to the Chinese Government in having to make up annually a certain amount representing the difference between the Interest due on the Capital Loan for the construction of this line and the amount of money paid towards it by the Net earnings, due to the working of the line; in other words the annual deficit. The figures given below show the annually diminishing deficit to be made up since the opening of the Railway for traffic, and they should convince those who peruse them impartially that the progress made by the Railway towards the full payment of its, so to speak, guaranteed interest has been consistent, very considerable, and quite in proportion to the results achieved by similar undertakings in the East, in fact anywhere.

Year.	Total of interest charges to be made up. (This varies on account of Exchange.)	Net Earnings made by Railway.	Annual Loss to Chinese Government.
1908	$ 1.692,333	$517,815	$1,174,518
1909	1,662,635	581,567	1,081,068
1910	1,564,850	627,671	937,179
1911	1,548,056	760,886	787,170
1912	1,386,909	A971,149	B 415,760

(A) This would have been $200,000 better if the Rolling Stock asked for eighteen months ago had been supplied.

(B) This would have been $200,000 less for the same reason.

A certain Power which has built 30,000 miles of Railway in the East most successfully; and is making a very handsome profit from them, lays it down as a fixed policy that Capital spent in constructing a Railway is well spent, and a sound investment if it earns its guaranteed interest, on the money borrowed, by the fifth year after the Railway has been open to public traffic. This Railway has been open fours years; and is in easy sight of such a state of affairs; nay would now be actually paying 5% if it had the Engines and rolling stock it has asked for some time back, and if it was not so very hard hit by exchange.

Similarly a just appreciation of the unique difficulties of Likin, shortness of rolling stock, discriminative competition by river and creek will, I feel sure, convince those accustomed to judge Railway results that the Administration has not neglected its opportunities.

A great deal of course depends on the standard of business aimed at, and it would be well to bear in mind that in accordance with the explicit terms of its Loan agreement this Railway has been worked, as far as it can be, according to the best modern practice. Thus the Shanghai-Nanking Railway is unique in China (I speak under correction) in assuming the position of Legal Bailee for the time being, with reference to its traffic both Coaching and Goods and the property entrusted to its charge for carriage; as all Railways in other countries are obliged to do by law; and in taking upon itself all the responsibilities entailed by the Board of Trade regulations for safety and care as far as they can be made applicable to the circumstances of the country. This fact alone will make it clear to all experienced readers that such responsibilities mean a very gradual evolution towards paying conditions in a new country; and that, when reached, the finance of the Railway will be on a sound and abiding foundation.

In harmony with the above remarks it has been the settled policy of this Railway, a policy warmly supported by the Managing Director, to place the development of the country, the nursing of the commercial welfare of the big towns, in other words the indirect profits and advantages to the country first and foremost; realizing that frequent means of communication beween places of business, ready and safe means for the transport of merchandise and money, the fostering of all facilities for "business" makes "business" on the principle that "often the sight of means to do ill deeds make ill deeds done" and also good ones. Such openings up of business increase the power of taxation, increase the value of land and generally build up cities. In support of the indication that our efforts in this gradual development of the business possibilities in fact our building up the indirect profits (which must act forcibly on the direct profit bearing possibilities of the Railway, as Night follows Day) are meeting with considerable success, I quote the following written statements from Chambers of Commerce, gentry, merchants of Soochow, and Wusih.

"Improvements in local and business conditions at Soochow since the opening of the Shanghai-Nanking Railway to traffic.

1.—Since the establishment of the railway station at Soochow the vast tract of waste land in the vicinity of Chong Men and Chi Men has greatly risen in value and modern buildings have been erected thereon along the approach road to the Chong Men street. All sorts of shops, stores and other houses have been opened and the place has rapidly become a flourishing and prosperous market and is still developing.

2.—Since the construction of the modern macadamized road approaching the station great facilities have been offered to the travelling public and a large class of people has been able to find a means of living by pulling ricshas, driving carriages, keeping stalls, etc., a circumstance which has had an indirect bearing on the maintaining peace and good order.

3.—Owing to the rapidity of transportation by rail the products of native industry such as sea products, silks, embroidery, etc., can be rapidly transported from the interior for sale and thus the business has been increased five or six fold in comparison with days of steam-launch locomotion.

4.—People are greatly benefited by the rail-borne post so that a return post may be expected in a day's time in communicating with Nanking, Chinkiang and other places along the Line.

5.—Consequent upon the building of the railway has come the establishment of telephones and electrical lighting, thereby greatly improving the conditions of life by affording safety in the streets at night and rapid communication, such as we have never enjoyed before.

6.—The splendidly comfortable coaches of your railway, the good treatment and civility to the passengers as well as other perfections leave nothing to be desired. These are entirely due to the efforts of the Shanghai-Nanking Railway which has rendered great services to China, for which we feel greatly indebted. There is only one thing we have to point out that since the opening of the T. P. R. the goods traffic on the Shanghai-Nanking Railway has been steadily increasing but owing to the shortage of wagons of the latter the traffic resulting occasionally congregated or blocked thereby in inevitable thefts. Hoping the General Manager of the Railway is aware of existing imperfection and will see his way to enquire into the matter and to purchase the additional wagons so that the merchants will feel greatly encouraged by giving their transportation to the railway entirely.

The products and business condition in Wusih.

1.—COCOONS AND SILKS. Before the establishment of railways the transportation of them by ships from Wusih to Shanghai takes 4, 5 or 6 days, now it takes only 12 hours, including the time for loading and unloading.

2.—RICE AND BARLEY. As above.

3.—SUNDRIES. As above.

4.—WOOD AND IRON MATERIALS. The transportation of them by ships from Shanghai to Wusih takes 5 or 6 days; but that by rail for the same distance takes only 6 hours.

5.—COAL AND PETROLEUM. As above.

6.—THE PASSENGERS. The launches may take them to Shanghai in 24 hours and the native junks may do so in 4 or 5 days. The rail can take them to Shanghai in 3 hours only.

7.—THE BUSINESS CONDITION. Before the establishment of railways, the income and outcome amounts not so much as 10,000,000. Now they have 20,000,000.

8.—COST OF LAND. Before the establishment of railways, each mow cost $20 or $30. Now each mow along the maloo costs $2,000.

9.—STYLE OF HOUSES. Before the establishment of the railways, the houses are in Chinese style. Now they are over 20 factories and godowns.

10.—THE ELECTRIC LIGHTS AND TELEPHONE. Two companies are started after the establishment of the railways.

11.—THE HOTELS. Before the establishment of railways, not a single one is built. Now there are over 20 places."

These letters and remarks, spontaneous as they are, coming from the actual people concerned, are a complete justification for the contention that the Shanghai-Nanking Railway

being a commercial enterprize, undertaken for the express purpose of serving the civil and military needs of the country may take to itself an amount of credit for indirect profits, more than sufficient to make up the balance between what it has actually directly paid and the 5% interest on the borrowed capital: and further that the actual payment of its direct 5% profit on its capital is a foregone sequence on these facts.

I hope I have made it clear that this Railway is doing its duty as far as the civil needs of the country are concerned and I think the events of the past year connected with the revolution have shown by the acknowledgment of the authorities, often and unstintingly expressed, verbally and in writing, that it fully did its duty in the time of strife and war in carrying the troops efficiently and in allowing the entire free movement of the people in safety when they were anxious to escape from the actual scenes of fighting. Competent Chinese authority has placed great value on this last fact as being one of the principal causes of the ungrudging sympathy and acquiescence in the local events of the revolution by the population at large.

I will close this Report with a very hearty acknowledgment of the work done by the officers and staff during the past year 1912. Extraordinary night and day work suddenly fell upon a staff not sufficiently recruited for day work, owing to the introduction of an oft resisted measure of reduction, and only those who experienced it can realize what stress of work the Officers and men, Chinese and Foreign, went through in the way of long hours, heavy work, attended often with considerable risk, and I commend them one and all to the special attention of the Managing Director, the Corporation and the Chinese Government.

REPORT BY THE CHIEF ACCOUNTANT

Mr. H. Middleton, Chief Accountant, reports as follows:—

Coaching Earnings.—As was anticipated the budget estimate has been largely exceeded. Coming to a detailed analysis of the results for the year, the following points are of interest. The details given below state approximately the proportions between the 1st and 2nd (combined), 3rd and Coolie classes:—

Class	Earnings Amount	Earnings Percentage	Passengers carried No.	Passengers carried Percentage	Vehicles in use No.	Vehicles in use Percentage
1st and 2nd ..	$ 318,516	14	220,038	5	21	24
3rd	1,639,113	75	4,001,836	83	49	57
Coolie	240,497	11	569,602	12	16	19
Total ..	$2,198,126	100	4,881,476	100	86	100

The following table gives the number of passengers carried on the Main Line during the past three years:—

	1st	2nd	3rd	Coolie.
1910	16,622	134,913	2,977,813	472,233
1911	13,770	115,422	3,053,107	508,510
1912	17,503	114,749	3,076,903	560,602

There is a large increase in the numbers carried under 1st and a small decrease under 2nd class as compared with the previous year. For 1st class the amount earned also shews a large increase. Of the total increase of $32,000 no less than $29,000 came from the traffic between Shanghai and Nanking. For 2nd class against a total increase of $22,000 there is an increase of $38,000 between Shanghai and Nanking alone as compared with the previous year, decreases in the short distance traffic being responsible for the difference. For 1st class generally speaking, the short distance traffic shews a shrinkage as compared with the previous year. This tendency is even more marked for 2nd class. Third class traffic shews an increase of $102,000 in round figures, a result which is very satisfactory indeed. Coolie class continues to show a marked development, the increase being $48,000.

The Woosung line continues to shew the marked development of the past two years. The following table compares the results for five years prior to the introduction of the reduced fares on the 1st January, 1910, and the three succeeding years:—

	At old fares 1905	1907	1909	At reduced fares 1910	1911	1912
Total number of passengers	544,296	486,081	412,259	886,472	981,510	1,102,658
Amount earned	$113,510	98,342	88,598	77,611	87,302	99,906

The following table shews the results for carriage of Specie during the past three years:—

	1910	1911	1912
Total value of coins carried	$53,210,419	73,176,870	107,878,079
Weight " " Piculs	26,113	37,202	57,680
Amount earned for freight $	12,600	13,200	12,000

The receipts under the head "Passengers' luggage' shew a fall.
Parcels traffic shews an increase of nearly 140%, and heads V and IX also shew considerable development.

Goods Earnings.—The actuals have more than exceeded the estimate.

The "Up" traffic (*i.e.* from Shanghai to Nanking) produced under 30% of the total.

Sundries.—The actuals proved to be $11,000 less than the budget estimate for reasons beyond our control.

Working Expenses.—Although the aggregate amount considerably exceeds the provision made in the budget estimate, the percentage works out at exactly the same figure, viz:—64.70%. The percentage for the year shews an improvement of 2½% over that of the previous year. The percentage for the 1st half of the year works out to 59.29% and for the 2nd half to 68.60% or an increase of 9%.

It will be noticed that in most of the Abstracts the charges for salaries are less than in 1911. This is mainly due to the bonuses granted to the staff in that year for services rendered in connection with the Revolution.

Abstract A.—Shews an excess of about $31,700 over the budget, though the percentage is 0.27 lower. The saving of $6,400 under head II is largely due to a considerable quantity of permanent-way material having been returned to Stores. The saving of $4,000 under head III is due to certain work having been deferred in order to make funds available under head IV which shews an excess of nearly $23,500. Of this sum $4,000 is covered by the saving under head III, the remainder being due to a number of small works, such as the repairs to the jetty, platforms, footbridge and Station Master's house at Chinkiang, $5,000, the matshed with electric lighting at Markham Road, $3,500, alterations to the Wusih godowns $5,000, and four or five other small works, costing not more than $1,500 each. Under head VI the excess of $20,800 is due to the bridge it was found necessary to build at mile 146½ and to the electric train staff installation between Shanghai and Soochow. The cost per mile maintained shews an increase of $47.

Abstract B.—Shews an excess of $52,000 round over the budget, but the percentage is 0.54 lower than was anticipated. The excess is due to the increased cost of heads III and V caused by the increased train service.

Abstract C.—Shews an excess of $20,500 round over the budget estimate. This is principally due to the excess of $3,000 under head III caused by the increased train service and to the excess of $15,000 under head IV caused by the alterations to rolling-stock mentioned in the Locomotive Superintendent's report. The cost per train mile has increased by nearly one per cent.

Abstract D.—Shews an excess of $88,000 over the budget which is made up by excesses of $8,700 under head II, $2,900 under head III, $22,500 under head IV, $1,900 under head V and $2,500 under head VI. There is a saving of $4,000 under head VII. The excess under head IV is larger than the original budget provision. The percentage, viz: 13.83 is 1.57% higher than was anticipated.

The cost per train mile has increased by 1.38 cents.

Abstract E.—Shews an excess over the budget estimate of $5,400. Owing to the increased earnings the percentage is all but 2% lower than what was anticipated

Abstract F.—Calls for no comment.

Abstract G.—Shews an excess over the budget estimate of $42,600. This is principally due to the heavy loss under the head "Discount" which amounts to $30,400 more than in the previous year. The rates at which small money could be disposed of proved to be the highest we have yet experienced, averaging 14.54% for the year, *i.e.* more than 1⅛% higher than in the previous year. As we recover 10% from the public, our loss amounted to 4.54% against 2.92% in 1911. Bad debts written-off account for $5,100. The increase in the amount of Commission paid was $5,000, and the loss on Exchange due to the rapid rise throughout the year was $2,100.

Cash Balances.—Of the sum of $52,251 outstanding at the close of 1911 for uncashed bank notes, $10,520 were realized during the year, leaving the balance of $41,731 at the close of the year. Of this balance $450 have since been realized to date.

Net Earnings.—These proved to be $101,500 higher than was anticipated and represent a return of 3.50% on the nominal value of the loan bonds. The improvement is more than 1% as compared with the previous year, and is partly due to the increased net earnings and partly to the high rates of exchange which prevailed at the dates on which the interest charges were paid.

Statistics.—Those for passenger traffic shew a marked improvement under items 2, 3 and 5 of the analysis given elsewhere though item 7 shews a considerable fall.

CAPITAL AUTHORISED AND RAISED BY DEBENTURE STOCK

Under Loan Agreement.	Nominal value of bonds.	Rate of issue	Amount of discount	Actual amount realised.	Actual sum realised in local currency.	Remarks.
	£		£	£	Tls. c.	
First issue	2,250,000	90%	225,000	2,025,000	14,482,665 81	Interest is payable at the rate of 5% per annum on the nominal value of the bonds.
Second „	650,000	95½%	29,250	620,750	4,276,798 65	
Total	2,900,000		254,250	2,645,750	18,759,464 46	

CAPITAL BALANCE SHEET AT END OF DECEMBER, 1912

Heads of Accounts.	Debit. Taels. Cts.	Credit. Taels. Cts.
Capital I. £2,025,000		14,482,665 81
Capital II £ 620,750		4,276,798 65
London Account. £ 966.13.6	6,712 54	
Hongkong and Shanghai Bank	3,095 53	
Interest on Loan	1,819,159 61	
Commission on Purchases in England £34,352.3.8	243,582 81	
Commission on Purchases in China	202,496 88	
Commission—General	8,299 45	
Transfers, Revenue		32,411 07
Nanyang College	10,000 00	
Exchange	68,451 34	
Likin Confiscation	3,825 64	
Final Heads as per Schedule A.	17,626,681 91	
Suspense Accounts	285,142 09	
Capital Outlay, Woosung Section	1,026,441 86	
Land Exchange	9,247 34	
Chinese Government Advances.		2,521,261 47
Total Shanghai Taels	21,313,137 00	21,313,137 00

SCHEDULE A, CAPITAL FINAL HEADS

Heads of Account.	Expenditure during the year. Tls. Cts.	Expenditure from the commencement of operations. Tls. Cts.
I.—Preliminary Expenses	7 00	16,696 63
II.—Land, Main Line £250,000		1,835,065 43
II.—Land, Miscellaneous		1,998 31
III.—Formation	1,258 00	1,714,866 43
IV.—Bridgework	1,785 64	1,966,356 91
V.—Fencing		48,963 03
VI.—Electric Telegraph	2,075 01	69,282 57
VII.—Track	8,688 24	4,842,218 19
VIII.—Stations and Buildings	33,850 85	2,292,925 09
IX. Plant	1,761 51	422,143 60
IX. Rolling Stock	3,855 85	2,636,041 55
X.—General Charges	44 75	1,780,124 17
Total Shanghai Taels	24,715 65	17,626,681 91

Revenue Balance Sheet at end of December, 1912

Heads of Account.	Debits. Dollars. Cts.	Credits. Dollars. Cts.
Hongkong and Shanghai Bank	* 98,659 57	
Imprests	1,340 89	
Transfers, Capital	44,398 69	
Suspense Heads	97,161 72	
Chinese Government Advances		(a) 241,560 87
Grand Total Mexican Dollars	241,560 87	241,560 87

* This amount includes $41,731 retained in the Railway cash safe on account of Nanking and Soochow Government bank notes unrealizable at end of December 1912. Another $450 have been realized to date.

(a) These are net figures after adjusting the difference between the "Interest on Loan" and "Net Earnings" as a charge to this head.

REVENUE ACCOUNT *for the year ending 31st December, 1912.*

DR.

Year ending December, 1911.	Per cent on gross receipts.	EXPENDITURE.	Abstract	Year ending December, 1912.	Per cent on gross receipts.
		To Maintenance of Way			
257,321 30	11.43	Works and Stations.	A	268,671 81	10.04
399,641 69	17.75	„ Locomotive Expenses	B	459,895 26	17.19
		„ Carriage and Wagon			
106,655 52	4.74	Expenses	C	135,793 65	5.07
298,539 46	13.26	„ Traffic Expenses	D	370,080 19	13.83
361,476 91	16.06	„ General Charges	E	358,414 42	13.39
422 70	.02	„ Flotilla Expenses.	F	372 00	.01
66,128 97	2.94	„ Special Expenses	G	111,577 06	4.17
1,490,186 55	66.20	Total		1,704,794 39	63.70
760,885 62	33.80	„ Balance, Net Earnings		971,148 52	36.30
2,251,072 17	100.00	Total Dollars		2,675,942 91	100.00

CR.

EARNINGS.

Year ending December, 1911.	Per cent on gross receipts.	Abstract	Year ending December, 1912.	Per cent on gross receipts.
1,944,133 63	86.37	By Coaching Traffic	H	2,249,045 13	84.05
1,283 83	.06	„ Telegraph Earnings.	..	1,214 66	.04
239,162 61	10.62	„ Goods Traffic	I	387,758 85	14.49
Nil		„ Flotilla Traffic	J	Nil	
66,492 10	2.95	„ Sundries	K	37,924 27	1.42
2,251,072 17	100.00	Total Dollars		2,675,942 91	100.00

ABSTRACT A.

Previous year. $ c.	Maintenance of Way, Works & Stations	Current year. $ c.
	I.—General Superintendence:—	
31,343.97	Engineer's salaries	27,459.03
6,545.88	Allowances of ditto., including travelling	5,412.71
21,760.70	Salaries of Subordinate Superintendents	20,168.45
855.33	Allowances of ditto., including travelling	789.48
12,293.11	Salaries and allowances of Office Staff	11,425.58
3,155.81	Office expenses	3,457.54
75,954.80		68,712.79
	II.—Maintenance and renewal of Track:—	
98,442.97	Wages	89,332.46
23,184.46	Materials	5,800.33
121,627.43		95,132.79
	III.—Maintenance of Bridges, etc:—	
4,664.52	Bridges and tunnels	5,578.61
8,563.61	Earthwork, fencing, roads, etc.	1,803.53
13,228.13		7,382.14
	IV.—Maintenance of Buildings and Fixtures:—	
32,123.44	Buildings and fixtures, excluding staff quarters	55,938.75
2,059.50	Staff quarters	2,522.13
—	Joint stations	—
34,182.94		58,460.88
	V.—Maintenance of Tools and Plant:—	
3,039.70	Tools and plant	3,868.01
313.61	Furniture and instruments	38.92
586.56	Electrical plant	722.53
3,909.87		4,629.46
6,329.11	VI.—New Minor Works:—	31,606.61
	VII.—Miscellaneous:—	
756.58	Plantations	216.00
131.69	Loss on stores	161.46
4,443.85	Carriage of stores	2,692.60
—	Loss or gain by exchange	—
5,332.12		2,747.14
260,564.40		268,671.81
3,243.10	Supervision charges debited to Capital A/c.	—
257,321.30	Total...	268,671.81

Mean mileage maintained by Revenue.	Miles.
Double line	Nil.
Single line	212.30
Sidings	31.18
Total single track, including sidings	243.48

Cost per mile—	1910	1911	1912
	901.77	1,053.72	1,103.47

N.B.—The embankment and bridges are for a double line as far as mile 53.1564' (Soochow), though only a single line of rails has been laid and maintained.

ABSTRACT B.

Previous year. $ c.	Locomotive Expenses.	Current year. $ c.
	I.—General Superintendence:—	
7,308.56	Salaries of Superintendents	6,799.97
1,270.60	Allowances of ditto., including travelling	2,230.50
17,400.34	Salaries of Subordinate Superintendents	15,527.28
556.05	Allowances of ditto., including travelling	583.74
11,252.02	Salaries and allowances of Office Staff	11,055.06
2,165.01	Office expenses	1,988.03
39,952.58		38,184.58
	II.—Running Expenses:—	
20,730.51	Wages of drivers and firemen	19,797.94
76.60	Allowances of ditto.	7.00
8,621.39	Labour charges on running engines	8,332.81
44.51	Clothing	88.50
1,297.23	Contingent expenses	1,142.02
30,770.24		29,368.27

1911. Tons.	Cwt.		1912. Tons.	Cwt.	
		III.—Fuel:—			
222,816.98	25,358. 8	Coal	31,214. 9		268,696.42
572.47		Bamboos, baskets, etc.			409.30
—		Wood			—
2,818.29		Wages			2,755.06
226,207.74					271,860.78
12,093.63		IV.—Water:—			13,405.12
19,598.33		V.—Running Stores:—			27,158.72
		VI.—Maintenance of Locomotive Engines:—			
26,323.00		Wages			28,517.47
34,535.49		Materials			37,752.97
60,858.49					66,270.44
		VII.—Maintenance of Plant and Machinery:—			
63.60		Wages			806.52
754.13		Materials			2,103.71
149.51		Furniture and Fittings			100.90
967.24					3,011.13
602.80		VIII.—New Minor Works:—			1,089.91
		IX.—Miscellaneous:—			
2,828.56		Loss on stores			1,171.23
5,732.69		Carriage of stores			8,350.15
29.39		Exchange			24.93
8,590.64					9,546.31
399,641.69				Total...	459,895.26

	1910	1911	1912
Cost per Engine mile in cents	33.93	35.28	35.31
Coal consumption per Train mile (weight in lbs.)	65.06	62.71	64.88
Coal consumption per Engine mile (weight in lbs.)	53.81	50.15	53.68
Coal consumption per Train mile (cost in cents)	25.78	24 60	24.93
Coal consumption per Engine mile (cost in cents)	21 32	19.67	20.63

ABSTRACT C.

Previous year. $ c.	Carriage and Wagon Expenses.		Current year. $ c.
	I.—General Superintendence:—		
7,781.49	Salaries of Superintendents		8,314.23
1,625.93	Allowances of ditto., including travelling		2,376 21
9,385.08	Salaries of Subordinate Superintendents		8,551.93
278.01	Allowances of ditto., including travelling		311.51
7,077.43	Salaries and allowances of Office Staff		6,933.69
975.73	Office expenses		1,030.68
27,123.67			27,518.25
	II.—Maintenance of Vehicles:—		
	Coaching		
14,300.14	(*a*) Wages	16,107.86	
19,728.40	(*b*) Materials	25,253.45	41,361.31
34,028.54			

		Goods		
	5,478.06	(*a*) Wages . .	5,104.22	
15,846.93	10,368.87	(*b*) Materials .	13,417.75	18,521.97
49,875,47				59,883.28
		III.—Running Expenses:—		
8,617.16		Labour		8,150.35
17,343.73		Materials.		21,103.31
51.99		Clothing		86.00
26,012.88				29,339.66
2,277.87		IV.—Minor Works:—		15,995.25
		V.—Maintenance of Plant and Machinery:—		
17.40		Wages.		398.31
178.00		Materials		918.23
24.76		Furniture and fittings		51.36
220.16				1,367.90
		VI.—Miscellaneous:—		
1,048.77		Loss on stores		1,559.35
82.01		Carriage of stores		107.48
14.69		Exchange		12.48
1,145.47				1,679.31
106,655.52			Total...	135,783.65
		1910	1911	1912
Cost per Train mile in cents . . .		12.39	11.77	12.60

ABSTRACT D.

Previous year. $ c.	Traffic Expenses.	Current year. $ c
	I.—General Superintendence:—	
28,636.25	Salaries of Superintendents	23,333.23
8,637.93	Allowances of ditto., including travelling	4,267.76
12,469.33	Salaries of Subordinate Superintendents	16,607.08
1,020.82	Allowances of ditto, including travelling	1,303.38
19,320.44	Salaries and allowances of Office Staff .	19,792.51
6,503.33	Office expenses	7,268.19
77,088.60		72.572.65
	II.—Station Staff:—	
134,099.24	Salaries	130,969.14
996.42	Allowances	1,475.63
30.92	Office expenses	7.95
135,126.58		132,452.72
	III.—Train Staff:—	
18,269.05	Salaries	21,449.73
223.11	Allowances	151.08
145.00	Running room expenses.	285.00
18,637.16		21,885.81
	IV.—Traffic Stores:—	
19,982.72	Station and office stores.	25,281.29
575.28	Vehicle equipment	9,886.73
2,107.42	Fittings and furniture	7,808.98
22,665.42		42,977.00
8,155.50	V.—Clothing:—	7,936.33
14,351.24	VI.—Printing, Stationery and Tickets:—	16,042.47
19,512.50	VII.—Handling Charges:—	20,901.11
—	VIII.—Goods Agency Commission:—	53,387.55
	IX.—Miscellaneous:—	
1,000.50	Clocks, etc.	1,496.87
1,871.77	Loss on stores	260.10
6.80	Carriage of stores	92.30
123.39	Exchange	75.28
3,002.46		1,924.55
296,539.46		Total... 370,080.19

	1910	1911	1912
Cost per Train mile in cents	29.76	32.96	34.34

ABSTRACT E.

Previous year. $ c.	General Charges.	Current year. $ c.
	I.—London Charges:—	
4,739.49	Consulting Engineers' fees	4,640.67
400.00	Auditors' fees	400.00
862.56	Office expenses	442.69
6,002.05		5,483.36
	II.—Charges in China:—	
	Foreign Commissioners and General	
37,836.62	Manager	36,692.64
134,916.49	Chinese Department	127,698.41
59,255.85	Audit and Accounts	56,029.40
10,252.19	Stores	6,024.63
17,530.52	Medical	15,541.55
3,361.82	Rents	3,340.90
	Furniture and Instruments	
33.00	(*a*) Chinese Department 552.70	
402.45	(*b*) Other Departments . 1,570.71	
435.45	2,123.21	
	Office Expenses	
3,096.52	(*a*) Chinese Department 5,877 50	
6,737.41	(*b*) Other Departments . 8,052.84	
9,833.93	13,930.34	
1,591.08	(*a*) Medicines . . . 1,250.90	
11,058.29	(*b*) Hospital charges . 13,510.95	
12,649.37	14,761.85	
1,106.59	Schools	1,336.13
38,340.12	Police	40,682.72
2,606.97	Advertisements	6,512.01
	Telegraph	
5,824.24	(*a*) Salaries and allowances 5,746.01	
21,367.85 15,543.61	(*b*) Maintenance. . . . 17,501.28	23,247.29
349,493.77		347,921.08
	III.—Miscellaneous:—	
5,119.12	Fire appliances and insurance premia .	4,638.85
667.28	Loss on stores	104.74
12.65	Carriage of stores	6.25
620.72	Exchange	260.14
6419.77		5,009.98
361,915.59	Less:—	358,414.42
438.68	Supervision charges debited to Capital A/c.	—
361,476.91	Total...	358,414.42

ABSTRACT F.

Previous year. $ c.	Flotilla Expenses	Current year. $ c.
	I.—Working Vessels:—	
418.50	Salaries and allowances	372.00
4.20	Handling charges	
	Victualling	
422.70	Total...	372.00

ABSTRACT G.

Special Expenses.

Previous year.			Current year.			
$	c.		$	c.	$	c.
		I.—Compensation:—				
3,102	19	For goods lost or damaged	705	81		
64	93	For personal injury . . .	47	20		
759	73	For other claims	2,373	05		
3,926	86				3,126	06
		II.—Losses of cash and bad				
185	88	debts written off.			5,281	79
		III.—Payments to other lines:—				
—	—	Locomotive borrowed . .	—	—		
279	00	Vehicles borrowed. . . .	1,282	24		
279	00				1,282	24
18,047	62	IV.—Commission.			23,146	15
43,328	89	V.—Discount on subsidiary coins.			73,748	84
—	—	VI.—Provident Institution.			—	—
		VII.—Miscellaneous:—				
68	04	Law charges	133	65		
262	13	Rates and taxes	125	36		
		Gardens	996	00		
		Loss on light and base coins	20	00		
15	56	Exchange	2,116	11		
15	00	Miscellaneous	1,600	86		
360	73				4,991	98
66,128	97	Total			111,577	0

ABSTRACT H.

Coaching Traffic.

Previous year.		Single fare per mile	First Class about 4 cents		Second Class about 2 cents		Third Class 3rd about 1 cent Coolie about ½ „		TOTAL.	
$	c.	I—Passengers	No.	Amount	No.	Amount	No.	Amount	No.	Amount
1,636,565	91	Ordinary	44,260	74,047.67	147,202	193,233.47	4,013,289	1,582,577.32	4,204,751	1,849,858.46
192,428	18	Coolie Class	—	—	—	—	569,602	240,496.86	569,602	240,496.86
22,152	70	Government	1,677	6,263.60	5,995	9,663.65	59,416	32,685.13	67,088	48,612.38
2,116	45	Privilege	28	49.30	452	447.02	13,763	1,946.73	14,243	2,343.05
35,686	93	Excursion	4,799	12,958.65	15,625	18,308.20	5,368	1,014.89	25,792	32,281.74
14,723	27	Excess fares		982.04		2,562.74		20,988.71		24,533.49
1,903,673	44	Total	50,764	94,301.26	169,274	224,215.08	4,661,438	1,879,609.64	4,881,476	2,198,125.98
		Previous year . . .	42,378	61,844.99	164,249	202,529.98	4,465,077	1,639,298.47	4,671,704	
		Season tickets . . .	7	165.00	17	85.00	674	1,531.30	698	1,781.30
1,670	85	Previous year . . .	2	18.00	16	139.00	613	1,513.85	631	
1,905,344	29									2,199,907.28
21,292	23	II.—Passengers' Luggage and Specie							Piculs 66,924	17,542.42
		III.—Government Baggage							„ 68	20.00
		IV.—Parcels:—								
6,572	08	(a) For the Public							„ 52,373	15,701.62
—	—	(b) For Revenue							„	— —
2,204	36	V.—Horses, Carriages, Dogs, etc. (Ordinary)							No. 3,201	3,770.92
230	00	VI.—Horses, Carriages, Dogs, etc. (Government)							„ 334	391.55
3,802	33	VII.—Special Trains							Train-miles 4,650	7,157.00
5	20	VIII.—Trollies							Trolley-miles 56	32.00
2,683	14	IX.—Miscellaneous								3,513.34
(a) 2,000	00	X.—Post Office								1,000.00
1,944,133	63					Total				2,249,045.13

N.B.—The Excess fares have been divided up between I, II and III class in the same proportion as the actual "Ordinary" traffic for these classes.

(a) The usual annual fee from the Post Office for 1910 was realised after the accounts for that year had been closed.

ABSTRACT I.

Goods Traffic.

Previous year.			No. of piculs lifted.	Amount $ cts.				
$	cts.							
212,522.16		I.—General merchandise	7,194,559	*342,918.94	1,354.45			
106.90		II.—Government stores	114,319	6,372.20	5,610.40			
					214,410.41			
					1,781.35	III.—Railway material for construction	35,743	386.35
							7,344,621	349,677.49
						IV.—Coal		
						(a) For the public	89,079	3,348.65
						(b) For Loco. Dept. (Revenue only)	566,425	8,164.25

7.15	(*c*) For other Railway services	2,394	7.45
6,972.00		657,898	11,520.35
	V.—Revenue stores, for all Depts.		
4,476.05	excepting coal	203,334	3,307.00
225,858.46		8,205,853	364,504.84
	VI.—Livestock (Ordinary)	No.	
11,581.05	(*a*) Horses, cattle, etc.	22,922	17,582.50
3,910.80	(*b*) Sheep, goats, pigs, etc.	8,718	2,716.95
15,491.85		31,640	* 20,299.45
	VII.—Livestock (Government)		
	(*a*) Horses, cattle, etc.	795	677.50
	(*b*) Sheep, goats, pigs, etc.		
— —		795	677.50
	VIII.—Rents, demurrage, wharfage, stor-		
2,190.35	age, etc.		2,242.61
2 65	IX.—Miscellaneous		34.45
239,162.61	Total		387,758.85

N.B.—16-75 piculs are taken as the equivalent of a ton.

*The above are net figures after deducting rebates.

	1910	1911	1912
Rebates allowed $	11,766	12,707	26,278

ABSTRACT K.

Sundries.

Previous year.		Current year.
$ cts.		$ cts.
200.75	Hire of locomotives	1,733.45
943.00	Hire of wagons	906.00
2,376.70	Mileage and Demurrage on vehicles over other lines.	210.00
168.75	Advertising	259.90
3,961.19	Rents of houses and lands	6,661.40
10,180.45	Rents of refreshment rooms and cars	11,526.50
30,615.00	Profits from Locomotive and Engineering Workshops	* 5,285.40
169.45	Sale of unclaimed and damaged goods	247.25
216.81	Unclaimed or unpaid salaries	215.89
3,670.15	Carriage and rickshaw permits and fines	4,003.30
4,032.46	Interest	4,724.25
	Sale of Revenue stores	
	496.80 Engineering 149.61	
	2,017.14 Locomotive 2,719.54	
	22.31 Traffic 33.39	
2,781.82	245.57 General — —	2,902.54
1,412.74	Miscellaneous	2,310.20
5,762.83	Exchange	7,508.99
66,492.10	Total	37,924.27

* Due to loss on the contract for the Tientsin-Pukow Railway coaches

Statement of Train Mileage

Previous year. Miles.	Estimated Locomotive expenses. $			Current year. Miles.	Estimated Locomotive expenses. $
543,661	191,830	Train miles run for public traffic.	Passenger	446,858	157,785
65,262	23,028		Goods	176,530	62,332
284,908	100,529		Mixed	440,137	155,412
12,009	4,237		Light	14,170	5,003
905,840	319,624	Total train Mileage		1,077,695	380,532
7,840	2,766	Miles of assisting engines (actual distance)		3,476	1,227
216,634	76,439	Miles of engines shunting and standing in steam for traffic purposes, calculated at 5 miles an hour		219,942	77,661
2,305	813	Miles run for Miscellaneous services (actual distance)		1,344	475
226,779	80,018	Total Miscellaneous engine mileage		224,762	79,363
1,132,619	399,642	Total engine mileage		1,302,457	459,895

DISTRIBUTION OF PASSENGER AND GOODS MILEAGE

Passenger.	Miles.	Goods.	Miles.
Passenger train mileage	446,858	Goods train mileage	176,530
Light (passenger)	—	Light (Goods)	—
Proportion of Mixed mileage	355,086	Proportion of Mixed mileage	85,051
Do. Light mixed	10,157	Do. Light mixed	4,013
		Maintenance (Earnings from this source credited to Abstract K.)	—
Total	812,101	Total	265,594

NET REVENUE ACCOUNT for the year ending 31st December, 1912.

	Dr $ c.
To interest paid in London during the half-year ending June, 1912, £72,500, @ 2/9 3/8 and 75.1	698,127.55
To interest paid in London during the half-year ending December, 1912, £72,500, @ 2/10 and 74 3	688,781.56
Total	1,386,909.11
	Cr
By net earnings of the year as per Revenue Account	971,148.52
By balance—being net loss	415,760.59
Total	1,386,909.11

ACCOUNT OF TOTAL NET RECEIPTS

	Dr.
To net earnings for the half-year ended June, 1912	572,860.92
" " " December, 1912	398,287.60
To increase of balance at credit of Demands Payable	12,148.12
" " debit London A/c	1,206.42
To Government banknotes realized during the year	10,520.00
Total	995,025.06
	Cr.
By increase of balance at debit of Traffic Account	2,810 24
" " " Miscellaneous Advances	42,087.20
By reduction in balance at credit of Foreign Railways	1 906.14
By amount of net receipts	948,221.48
Total	995,025.06

INTEREST ACCOUNT

	Dr.
To amount of net receipts as per account above	948,221.48
To balance—being excess of interest over net receipts	438,687.63
Total	1,386,909.11
	Cr.
By interest paid in London for 1912 as per net Revenue Account above	1,386,909.11
Total	1,386,909.11

ANALYSIS OF THE WORKING RESULTS

For the year ending 31st December, 1912.

AVERAGE LENGTH OPEN 203.25 MILES

PASSENGER	1910.	1911.	1912.
Receipts from coaching traffic $	1,766,338	1,944,134	2,249,045
Receipts per mile open "	8,690	9,565	11,065
" " per week "	167	183	212
Passenger train-miles run No.	742,479	735,991	812,101
Average receipts per passenger train-mile $	2.38	2.64	2.77
Number of passengers carried No.	4,488,052	4,672,335	4,881,476

Average number of passengers per train-mile . . .	No.	6.04	6.35	6.01
Goods Traffic				
Receipts from goods traffic, exclusive of demurrage on goods	$	205,548	241,353	385,516
Receipts per mile open	„	1,011	1,187	1,897
„ „ per week	„	19	23	36
Goods train-miles run	No.	167,364	169,849	265,594
Average receipts per goods train-mile	$	1.23	1.42	1.45
Piculs of goods carried, excluding livestock. . . .	Piculs.	4,637,942	5,268,144	8,205,853
Average number of piculs per train-mile	Piculs.	28	31	31
Working Expenses				
Cost per mile open	$	6,843	7,332	8,388
„ „ per week	„	131	141	160
Total working expenses for both goods and passengers, deducting from them telegraph, special and miscellaneous receipts and demurrage on goods . .	„	1,344,215	1,424,601	1,663,412
Average cost per train-mile: goods and passenger miles assumed to cost the same	„	1.48	1.57	1.54

Report by the Superintendent of Way and Works.

Mr. A. C. Clear, Superintendent of Way and Works, reported as follows:—

Construction.

Woosung Forts.—A passenger Jetty with 40'-0" frontage has been erected at the South West end of the concrete sea wall to enable passengers from ocean going steamers to proceed to Shanghai by train. This was a much needed accommodation, being especially useful to naval men. A 10'-0" depth of water is obtainable at lowest spring tides, and the site being carefully chosen in consultation with the Harbour Master safe landing is possible for passengers from launches or tenders of considerable size under almost any weather conditions.

Goods Sheds.—Upon the opening of the Tientsin-Pukow Railway, goods traffic developed so rapidly that urgent steps had to be taken to provide additional goods shed accommodation. It is not of the permanent nature that could be desired nor can it be considered adequate even for present needs. Owing to shortage of funds the following only could be given:—

Shanghai.—Present goods shed extended to the fullest extent the site permitted 170'-0" × 45'-0" over awning.

Markham Road.—New goods shed 500'-0" long by 55'-0" wide over awnings.

Nanking.—New goods shed 200'-0" long by 45'-0" over awning.

Nanking Wharf.—The provision of a small goods shed and sidings at the riverside proved of such utility that immediate extension was essential. To obtain the maximum accommodation at the minimum of time and expense, a scheme for a dock 1,100 feet long by 200 feet top width by 30 feet deep was proposed and is now being carried out. By this scheme instead of "end on" loading, with its well known limitation and difficulties, only 200 feet of the river frontage is taken up by the opening to the dock, and "side on" loading will be possible from a water frontage in the dock of 2,200 feet, giving a loading capacity of over 150, 30 ton wagons from 3 lines simultaneously, all practically within (at any level of the river) 100 feet from boat to wagon, this being the maximum load a coolie will carry without additional payment. The necessity of extensive accommodation here had long been foreseen, but partly owing to lack of funds, sanction was not accorded until it was imperative. It is to be hoped that the excellent prospects of considerable traffic here will not have been jeopardised by the delay in putting this work into hand or the inconvenience under which the present traffic is being worked.

Extensive filling is very necessary here and at the Nanking terminus station.

A. W. U. Pope, C.I.E. General Manager

Mr. Chung Mun-yew Managing Director

New Bridge.—In consequence of inadequate water opening at Mile 146¼ floods were of annual occurrence and considerable damage was done to the surrounding country. A new 20 feet bridge has therefore been built through the bank, which is 26 feet high at this place. Special arrangements were made to carry this work out with the least possible interference with the Traffic working. It is satisfactory to record that no stoppage or delay of any kind occurred, the work being completed in a little over one month.

Revenue Works

Woosung Creek.—A temporary footway has been attached to the existing bridge over the Woosung Creek until the public road bridge is repaired.

Woosung Locomotive Works.—One new 15-ton spring testing machine has been put down. The roofing and ventilation of the shops is far from satisfactory; this is being attended to as funds permit. Reinforced concrete lifting blocks have been put in for carriage work.

Woosung Wharf.—One of the two seed cleaning machines has been installed in the godown, the other is under erection. Both will be belt driven by electric motors. These have been provided as an incentive to traders, particularly for sessamun seed traffic. From quarterly soundings taken along the bunding no appreciable change has occurred either from scour or silt. The cutting away of Pheasant Point opposite is rendering our property safer and easier of approach by diverting the force of the tide away from our bank of the river. The facilities provided at Woosung for the shipment of cargo are gradually being realised, and there is every possibility of this wharf developing into a most valuable and useful property. The proposal to develop Pukow as a port and its possible effect on this Railway is receiving the closest attention. Woosung is capable of being developed without any very great expenditure to meet the joint needs of the Tientsin-Pukow Railway, and this Railway as a Port for some years to come. The provision of a suitable wagon ferry from Pukow to Nanking is a factor of the first importance. Schemes are under preparation to provide this accommodation at a minimum cost.

Shanghai.—New office provided at Power house for electrical engineer and staff. Cattle dock lowered and generally improved. An improved type of sand furnace erected in the Running Shed. New Pig Shelter erected for the reception of this rather extensive traffic.

A simple system of signals for the protection of the Main Line interlocked with handworked points has been devised and works satisfactorily.

Markham Road.—A temporary matshed godown has been erected to give more storage accommodation. This is a very unsatisfactory method of meeting an urgent need, but, unfortunately funds will permit of nothing more substantial at present.

Nansiang.—An experimental system of signalling has been put down for working the straight line both ways. By eliminating as far as possible the use of loops, considerable wear and tear would be saved on permanent-way and rolling-stock.

Kunshan.—In consequence of the rotting of the timber footbridge a new one has been erected from old steel joints.

Soochow.—This engine shed roof required renewing, and as such an extensive shed was not required the size was considerably reduced, decreasing future maintenance charges and providing glass roofing for Changchow shed.

Wusih.—The whole of the goods yard has been revised now that the special arrangements made originally for dealing with tribute rice are no longer required. The sidings have been taken close down to the river front and godowns removed and rebuilt in more convenient positions. This was a much needed improvement and enables cargo to be very quickly handled, the carrying load being reduced by over 75 per cent. Shunting operations are also facilitated by the general improvement in the layout of the yard.

A new shelter for pigs has also been provided and the river frontage straightened and stone pitched throughout.

Changchow.—The engine shed has been reroofed, economy being effected by utilizing the Mellows glazing from the Soochow shed. A new approach road with timber road bridge spanning the creek has been made at the Western end of the station connecting with the new public road leading to the city.

Lucheng.—The station building was accidentally destroyed by fire and has been rebuilt.

Tanyang.—A new goods loading platform 70 feet long has been provided.

Chinkiang.—The station master's house forming an obstruction to a clear view of the goods yards was set back to the boundary, at the same time the sidings were straightened out and a dangerous gradient improved. The timber platform walls were in a dangerous condition through rot and have been entirely replaced by reinforced concrete blocks of special design. These concrete blocks are of

Z section cast separately, and can be put into position without disturbance of traffic. No foundations are required as the lower portion of the *Z* gives sufficient bearing surface, the weight of filling on this lower portion being sufficient for stability. The upper portion of the *Z* projects sufficiently far to provide a refuge between the face of the platform wall and the nearest rail, should anyone fall or be pushed off the platform whilst a train is entering the station. The cost is one-third of the existing standard brick platform walls. The maintenance charges being practically nil.

The old timber footbridge was also affected by rot and is being replaced by one with reinforced concrete approaches.

Ash pit timbers were continually being burnt and are now generally being replaced by concrete blocks.

CHINKIANG BUND.—The Jetty has been temporarily repaired and at the same time widened after being partially destroyed by a typhoon. With the opening of the Tientsin-Pukow Railway the traffic at this place may be considerably reduced so that it would not be advisable to contemplate any very extensive work here for the present.

SIASHU AND YAOHWAMEN.—These stations have been signalled as crossing places.

NANKING.—The Shiakwan bridge has been rebuilt, the opening span taken out and the road surface levelled on the old piles. A permanent bridge will soon be required here to avoid heavy annual maintenance charges.

BRIDGES.—Three arch bridges Nos. 72, 73 and 104 have been converted into girder bridges owing to the settlement of approaches bringing the sleepers down on to the crown of the arch, crushing the brickwork and giving a bad jar to traffic when passing over. This was a more economical method than lifting the line and making up banks. The saving in ballast alone being considerable.

BRIDGE NO. 44.—The piers of this bridge have been rebuilt in concrete as the brickwork failed.

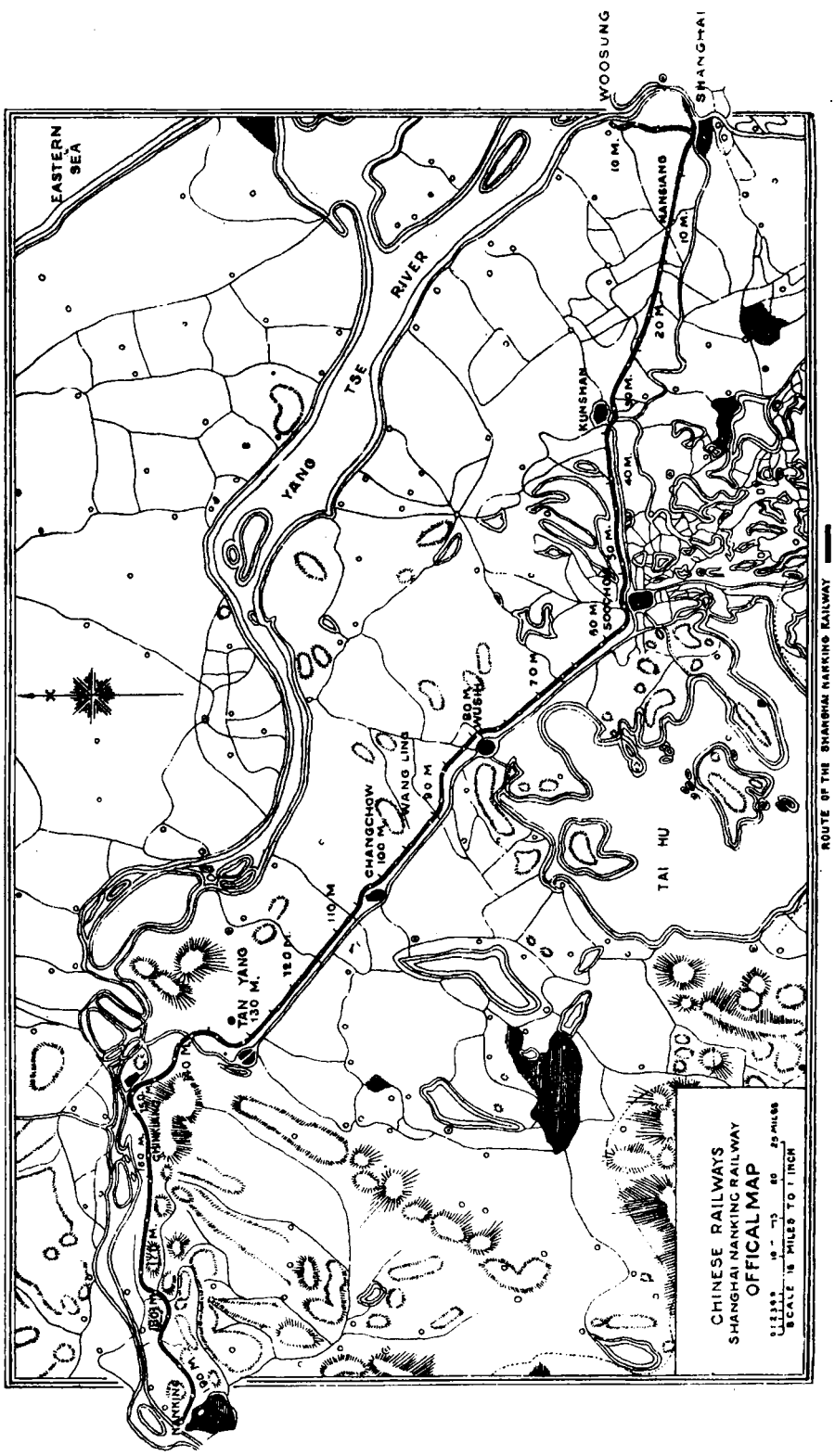
KAOTZE BRIDGE.—Owing to settlement of approaches this bridge of 40 feet span was on a sharp change of gradient, and to avoid the heavy expenditure that would have been necessary in making up formation and lifting on ballast (head room permitting) the girders were lowered 13 inches. No stoppage or delay occasioned to traffic.

BRIDGE PAINTING.—5 Major bridges have been repainted. 78 Minor bridges repainted. 35 Minor bridges covered with Bitumen Solution. Comparisons are being made between the Bitumen Solution and paint, the former being much cheaper if it has the same preservative qualities and length of service of paint.

PERMANENT-WAY.—The loops at Waikwatang and Hushukwan have been removed, not being necessary for traffic working. Crossings have been renewed at Henglin Eastern points, Wangting Eastern and Western points, and Wusih Eastern points No. 5. No. 4 sets 1 in 10 crossings have been especially strengthened and put in experimentally.

The triangle at Wusih has been entirely relaid to easier curves and a 30% saving of material effected thereby.

Owing to several broken rails a speci l detailed inspection of all permanent-way was carried out and all faulty rails noted or replaced in the line. One of the disadvantages from a constructional point of view of opening up a railway to heavy traffic before the earthwork is properly consolidated, that of ballasting on new banks, has shown up on this railway. Ballast on new banks is pressed into the formation and forms a channel or ditch underneath the line, this collects and retains water, is a fruitful source of slips, wastes a large percentage of ballast and gives an unsatisfactory roadbed needing constant attention. In order to remedy this, efficient drainage has been given to the ballast on all big banks by inserting bamboo tubes about 12 feet long 5 to 6 inches diameter,



at frequent intervals to the lowest point of ballast under the line out on to the slope of bank. Satisfactory results are noted and the cost is insignificant.

RAIL CREEP.—The system of prevention of rail creep by anchoring the rail in the centre and letting the ends have comparatively free play by lubricating fishplates has been carried out over 50 miles of line and is satisfactory in preventing further movement. The cost is much cheaper than any other system known to the writer.

JAPANESE SLEEPERS.—599 Japanese sleepers have been replaced by Jarrah on the Woosung line.

Electrical Department

TRAIN LIGHTING.—Three 3rd Class coaches were converted for use as power cars for supplying electric light to coolie coaches.

Fourteen coolie coaches were wired and fitted for attachment to the power cars.

Two 3rd Class coaches were converted into 1st Class Sleeping cars, the wiring and lighting being altered to suit.

Extension from Shanghai Power House.

SHANGHAI GOODS SHED.—Electric lighting has been installed in the new extension of this shed.

LIKIN OFFICE.—Electrically lighted.

MARKHAM ROAD.—A main was run out to Markham Road and electrical lighting supplied to the dock and godowns and also to the Station Inspector's quarters here.

SHANGHAI YARD.—All wooden arc light poles have been replaced with either light steel lattice posts or specially adapted tubular steel telegraph posts, necessitated by the timber posts rotting at ground line. The railway Hospital X Ray coil was burnt out and sent to the Power House for repair. This was a very delicate and tedious operation necessitating the highest mechanical skill, and that it was carried out successfully speaks well for the capabilities of this Department. Usually these coils have to be sent to Europe for repair, and this is the first occasion that an attempt has been made to carry out such highly skilled work in China

10th February 1912 are the two events chiefly responsible for the large increase in passenger earnings for 1912.

The total coaching receipts and the number of tickets sold amounted to $2,250,260 and 4,882,-173 respectively, as compared with $1,944,134 and 4,672,335 for the previous year.

The International Recreation Club's new Race course at Kiangwan has proved a great attraction to Chinese and Foreigners, and several successful meetings were held during the year.

The stretch of water at Henli, 30 miles from Shanghai, for sailing and boating is growing more popular year by year and the expenditure of a small sum in pleasure boats and rest-houses is only needed to convert this place into a fashionable week-end resort for Shangnai residents during the Spring and Autumn.

On the 1st January 1912, Dr. Sun Yat-sen travelled by special train from Shanghai to Nanking to assume the first Provisional Presidency of the Chinese Republic.

The Shanghai-Nanking Railway Station at Shanghai

Three 1st Class coaches for the Tientsin-Pukow Railway were fitted with electric light and bells complete.

The maintenance of train light apparatus generally has received careful attention and is in good condition.

Plant and Installation Work

WOOSUNG.—The Nederland Harbour Works workshop was connected up to our mains for the supply of electrical current.

Every effort is being made to attract private consumers, to reduce as much as possible the heavy power charges with which our workshops are saddled in consequence of the high capacity of the engines installed. Seldom is more than a third their capacity needed, the result being high power charges.

GENERAL MANAGER'S HOUSE.—The General Manager's house was wired complete for electric lighting consequent upon the practical rebuilding and enlargement of this house for the General Manager.

The following works are at present in hand:—

SHANGHAI TO SOOCHOW.—Erecting an additional line from Shanghai to Soochow for the installation of electrical train staff working

WOOSUNG.—Running mains from Power House to Goods shed and erecting motors for the seed cleaning machines.

WUSIH.—Installing electric light to Wusih station, supply being taken from town mains.

TELEGRAPH AND TELEPHONE LINES.—All poles to the above have been opened out at ground line well tarred and banked up again as a preservative measure.

Report by the Traffic Manager

Mr. J. D. Read, for the Traffic Manager, reported as follows.—

COACHING.—The opening of the Tientsin-Pukow Railway to regular traffic, and the selection of Nanking as the temporary Capital of the Chinese Republic from the 1st January to the

GOODS.—The opening of the Tientsin-Pukow Railway, the reorganization of the Likin administration whereby the taxes on rail borne traffic were made the same as by water, and the anxiety of farmers and merchants to send their goods to Shanghai as soon as the country became fairly settled after the Revolution, have created a far larger goods traffic since October than we are able to satisfactorily cope with. The fact that weighs most with merchants in giving the Shanghai-Nanking Railway the traffic in the face of the competition is that the Railway assumes the position of legal Bailee in reference thereto.

Owing to the paucity of cars we have to unload and return, loaded or empty, all cars in 5 to 6 hours, a practice which though it increases the earnings will ruin the stock, which is overworked.

In spite of every effort made to carry the traffic offering, hundreds of tons of beans have been spoiled at Nanking and Pukow owing to our inability to provide sufficient wagons. This

coupled with the fact that two or three steamers made additional trips to Nanking during the latter part of the year, gives some idea of the volume of traffic already coming down the Tientsin-Pukow Railway.

On the 15th January 1912 two Goods Compradores were appointed and they, together with the Traffic Canvassers, have done excellent work during the year in encouraging merchants to send their goods by rail and advertising our rates and regulations—in fact we owe the present spurt very greatly to them

On the 6th April 1912 arrangements were made with the Chinese Customs for the transport by rail of certain Native Exports under Transit Passes from the Treaty Ports of Nanking and Chinkiang to Shanghai. This concession as far as this traffic is concerned has put us on the same footing as the river steamers, and has resulted in a rapidly increasing traffic in Sesamum Seeds for export to foreign countries.

The total quantity of goods carried was Piculs 8,205,853 as compared with Piculs 5,268,-144 in 1911; the earnings being $387,759 or over 60% more than the previous year. These figures are satisfactory when it is borne in mind that the transport of Tribute Rice has ceased with the change of Government.

Arrangements were entered into with a Lighter Company at the end of the year for lightering goods to and from our Woosung Wharf and this has resulted in an increasing export traffic to foreign countries which we trust will soon be sufficiently large to warrant ocean steamers calling there.

The Cocoon Season was an exceptionally good one, no fewer than 149,383 bales having been carried.

RATES & FARES.—No alterations have been made in the Coaching fares during the year 1912, and on the Woosung Branch Line the fares which were inaugurated in 1910 still continue to be greatly appreciated.

The Goods rates remain practically the same as in the previous year and only in a very few instances has it been considered necessary to make any alterations to compete with the water routes.

ACCIDENTS.—During the year there were no accidents to the travelling public, but I regret to report that the number of trespassers killed and injured has increased very considerably. This is due in a great measure to the running of night trains, for so long as the Railway is used as a public highway, the increase in the train service is almost certain to be attended by additional loss of life.

Particulars of all accidents are given in the table below:—

	By accidents to trains rolling-stock permanent-way, &c.		By accidents from other causes including accidents from their own want of caution, or misconduct		By accidents whilst passing over Railway at level crossings		Trespassers		Miscellaneous, not included in preceding columns		TOTAL	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Passengers ..	—	—	5	21	—	21	—	—	—	—	5	21
Servants ..	1	1	1	2	—	2	—	—	—	—	2	3
Other Persons ..	—	—	—	—	—	—	63	25	—	—	63	25
Animals ..	—	—	—	—	—	—	—	—	4	2	4	2
Totals in all classes	1	1	6	23	—	23	63	25	4	2	74	51

The total number of people killed was 70, but *no* passengers or servants were killed from causes beyond their own control.

The particulars of the only serious accident are as follow:—

At 7.25 p.m. on the 31st October 1912, train No. 16 Down collided with a Permanent-way trolley outside Soochow Station. The coolie in charge of the trolley was killed, but the three other coolies escaped unhurt.

The cause of the accident was due to the carelessness of the coolie in charge who took the trolley out without permission contrary to all rules and regulations.

COMPLAINTS.—The only complaints received during the past year have been due to the shortage of rolling-stock, both Coaching and Goods.

STATIONS.—The only stations opened during the year were Woosung and Nanking Wharves.

Woosung River-side Wharf, originally opened in 1911 for the transport of Tribute Rice, was re-opened in July. From October to the end of December 1912, we handled over 5,000 tons of traffic at this station. When the value of placing goods for export and import under Bond here is realized and merchants thus save all the expense and trouble in connection with the 8 miles of river between Woosung and Shanghai, much work will be done at this Wharf.

Nanking Wharf was opened in May 1912 to facilitate the transport of traffic between the Shanghai-Nanking and the Tientsin-Pukow Railways.

TRAIN SERVICE.—With the exception of the night trains and the extra Goods trains, the train service remained practically the same as in 1911—the Summer Time Table taking effect from the 20th April and Winter Time Table commencing on the 1st December 1912.

On the 24th February 1912, a Night Train Service between Shanghai and Nanking was inaugurated and has proved a marked success. The twenty-two 1st class sleeping berths provided on each train have been so well patronized that it has been decided to double this number in the near future.

On the 9th May 1912, the Express Local train running between Soochow and Shanghai was cancelled.

In order to meet the heavy Cocoon traffic during the Summer, extra Goods trains were run between Shanghai and Wusih from the 1st June until the end of September 1912.

From the 10th August 1912, extra Goods trains were also arranged to run as required from Shanghai to Nanking, and vice versa, to meet the increasing Goods traffic.

A Market Gardeners' train was run in the early morning during the season, from the 28th May to the 9th November from Nansiang to Shanghai; it had to be taken off because we could not spare the cars.

STAFF.—Mr. P. L. Gaussen, Assistant to the Traffic Superintendent, was granted six months' furlough on and from the 8th July 1912.

CLAIM.—The claims during the year amounted to $3,126—of this sum only $706 were paid for Goods damaged or lost, which speaks well for the excellent work performed by the Goods Staff including the Goods Compradores.

The numerous robber bands are taking advantage of the unsettled conditions prevailing pending the establishment of a permanent form of Government and are responsible for over one-third of the total claims paid during 1912.

MISCELLANEOUS.—Too much stress cannot be laid on the urgent need for a ferry at Nanking, increased terminal facilities at the Goods Depots, and more rolling-stock, as the Goods traffic needs careful fostering if the Railway is to compete with the River steamers and creek native boats traffic.

The staff, one and all, have by their untiring efforts secured more traffic than we are at present able to cope with through the shortage of rolling-stock generally.

Report by the Chief Medical Officer

Dr. J. P. Ziervogel, Chief Medical Officer, reports as follows:-

The general health on the Railway has not been very good during the past year. This is attributable to the exceptionally hot summer, the epidemic of typhoid in Shanghai in the Spring and general unhealthy condition which prevailed during the months of July, August and September.

At the suggestion of the General Manager a Sanitary Committee was formed in February consisting of the Superintendent of Way and Works, the Locomotive Superintendent and the Chief Medical Officer, Sanitary rules were drawn up, and two Indian sanitary inspectors were appointed.

Special precautions were also adopted for Sanitary measures uring the summer months. Amongst these may be mentioned means for sterilizing face towels served out to Chinese passengers on the trains and the distribution to all stations of barrels and measures for mixing disinfectant fluids, with rules for its use.

During July and August there was a great deal of cholera all over the country round the Railway, but only six cases occurred among the staff. There was, however, a great deal of dysentery and diarrhœa.

In November all the permanent-way coolies were examined medically, and those with organic disease or physical defects were weeded out. Since then coolies are examined before they are employed.

The number of accidents attended with injury to persons or loss of life during the year was 125. The majority of these were trespassers. The number of accidents to employees is surprisingly small.

The following are the number of cases treated on the various sections:—

	Number treated at dispensary or visited	Number admitted to the Hospital
Shanghai	1721	122
Soochow	148	36
Chinkiang	986	77

(*Continued on next page*)

THE PEKING SYNDICATE

The Paris correspondent of the *Financial News* learns that the Peking Syndicate has personally subscribed Frs. 5,000,000, and the promoting syndicate another Frs. 5,000,000 towards the capital of the Industrial Bank of China. The balance of Frs. 20,000,000, or 40,000 shares, has been underwritten by a syndicate, and will shortly be offered in subscription preferentially to existing shareholders of the Peking Syndicate. In any case, any holder of 50 Shansi shares, or 50 Peking ordinary, or one Peking deferred, will be entitled to one share at par of the Industrial Bank of China, the board of directors of which will reside in Paris, with a general committee of direction in Peking.

STATEMENT OF ROLLING-STOCK *for the year ending 31st December, 1912.*

Description									Repairs and Renewals			
LOCOMOTIVES												
Tender or tank	CLASS	Distribution of wheels	Hauling power on the level in tons	Gross weight of engine and tender in tons	Total stock at end of previous year	Additions during the year	Reductions during the year	Total stock at end of the year	Actual stock in running order on the last day of the year	Number repaired during the year	Number undergoing or awaiting repairs on the last day of the year	Average number undergoing repairs or renewals at any one time	Stock condemned in this and previous year awaiting replacement
Tank	A. 18 / 6×57	4-6-2	1,100	74.35	2			2	1	8	1	.5	
Tender	B. 18 / 6×57	4-6-0	1,100	102.35	10			10	8	27	2	.7	
Do.	C. 18 / 4×79	4-4-0	917	98.45	12			12	10	41	2	1.8	
Do.	D. 18 / 2×84	4-2-2	846	97. 8	4			4	3	23	1	.4	
Tank	Bagnall 15 / 6×43	6-6-0	705	32.50	2			2	2	2			
Do.	Am. Passr. 13.5 / 4×62	2-4-2	780	50.30	1			1	1	2			
Trav. cranes	8 ton	.....	.....	.....	1			1	1				
Do.	5 „	.....	.....	.....	1			1	1				
				TOTAL	33			33	27	103	6		

Description	Length of underframes in feet	Tare T. Cwt.	Carrying capacity (passenger)							
COACHING VEHICLES										
Saloon cars	52	37.16	8	1			1	1	5	1
	68	43.16	16	1			1	1	4	—
*Officers' saloons	32	21.16	4	2			2	2		
	42	29.16	6	2			2	2	4	.2
	55	30. 8	12	2			2	2	4	1
First class corridor kitchen cars	68	41. 8	64	1			1	1	13	.3
Do. do. do. (with coupés)	68	41.18	46	5			5	5		
First and second class dinner composite cars	68	39.18	60	4		3	1	1	9	.3
First class sleeping cars	68	36. 8	22	—	2		2	2	6	
First and second class composite cars	68	39.18	72	3	3		6	6	10	.3
Do. do. (with longitudinal seats)	55	27. 8	70	3			3	3	10	.3
First, second, third and brake composite cars	55	25.16	90	1			1	1	1	—
Second class lavatory cars	68	39.18	72	2			2	1	1	1
Third class lavatory cars	68	36. 4	100	19		2	17	16	33	1 .1
	55	26. 8	56	4			4	4	5	
	36 5/8	17. 8	52	2			2	2		
Do. do. (with longitudinal seats)	68	37.12	130	11			11	11		
Do. do. (with guard's compartment)	68	37.12	120	3			3	3		
Do. cars (without lavatory)	36 5/8	17.10	56	2			2	2		
Do. brake and luggage composite vans	68	36. 8	60	4		1	3	3	7	.1
Do. do. and large luggage van	68	36. 2	40	2			2	2		
Do. do. mail composite vans	68	37. 2	40	3			3	3	8	.1
Do. do. luggags vans	55	26. 2	40	2			2	2	1	
Luggage and treasure vans	68	35.18	—	1			1	1		
Brake, mail and luggage vans	68	35.18	—	—	1		1	—		1

Brake and mail vans	36½	17. 2	—	2			2	2			
Covered goods, bogie, steel	38	16.19	30	40		2	38	38	41		1.8
Do. do. (fitted for poultry)	38	17.0	30	—	2		2	2			
Do. bogie, steel sides, wooden tops and roofs	38	17.0	30	50			50	49	35	1	1.3
Do. bogie, steel sides, wooden tops and corr. iron roofs	38	15.8	30	21			21	21	34		.7
Do. four wheeled, steel	22½	9.14	21	16		3	13	13	5		.1
Do. do. (fitted for fish)	22½	9.14	21	—	3		3	3			
Do. do. (fitted for ice)	22½	10.0	21	4			4	4			
Do. do.	18	9.11	15	—	2		2	2			
Do. do. steel sides, wooden tops and roofs	18	9.10	15	4			4	3	1	1	—
Medium sided wagons, bogie, steel	38	14.5	35	42			42	39	83	3	5.2
(*a*) Do. do. (fitted for coolie class	38	15.8	—	14			14	14	9		.2
Small sided wagons, four wheeled, steel	18	8.8	18	44		11	33	33	46		1.2
(*b*) Do. do. (fitted for coolie class)	18	9.12	—	—	3	1	2	1	1	1	—
Do. do. (for sewage tanks)	18	8.8	18	1			1	1			
Cattle wagons, bogie, steel, sides, wooden uppers	38	15.8	30	17			17	17	30		.9
Do. 4 wheeled, steel sides, wooden uppers	18	9.0	15	1			1	1			
Pig wagons, 4 wheeled, steel	18	9.15	15	—	2		2	2			
Horse boxes, steel	38	19.12	6	2			2	2			
Market wagons, 4 wheeled steel	18	9.8	15	—	6	2	4	1	12	3	.7
Flat wagons, bogie, steel	38	10.5	35	5			5	5	4		.1
Do. wooden	22	8.0	20	2		2	—				
Kerosene tank wagons	38	16.18	30	1			1	1			
Oil tanks, cylindrical	36	14.0	30	2			2	2	5		.2
Brake vans, bogie, steel	38	19.12	15	10			10	9	11	1	.4
Brakedown van	32	8.0	20	—	1		1	1			
Flat breakdown wagon	32	8.0	20	—	1		1	1			
Breakdown van, 4 wheeled	18	9.10	15	—	1		1	1			
Total				358	27	27	358	345	438	13	

* One 55 ft. Officers, saloon car available for ambulance purposes.
(*a*) Converted into Coolie class and used entirely for passenger traffic (60 passengers)
(*b*) " " " (32 ")
c 13 with corrugated iron roofs.

A 5,500 TON MOTOR SHIP

The twin screw motor ship *Siam*, under the command of Captain C. Jensen, arrived at Shanghai recently on her maiden voyage to the Far East.

The vessel, which is a four-masted ship of 5,500 tons gross, 2,489 net tonnage and is capable of carrying about 10,000 tons dead weight, is 410 feet in length, 53 feet beam and when deep laden has a draft of 28 feet. She is owned by the Danish East Asiatic Co., of Copenhagen, and is the largest vessel of her type which has yet visited the Far East. She was built by Messrs. Burmeister and Wains of Copenhagen, and is the first of four new ones being built for the company, the other vessels being the *Malakka*, *Annam*, and *Tongking*, and they, along with the *Siam*, will all be engaged in the Far Eastern trade.

The *Siam* is a splendid sea boat and is easily handled in the roughest sea, and in addition is far more economical to run than an ordinary steamer. On the voyage out from Antwerp she maintained an average speed of 11.8 knots per hour on a daily oil consumption of between ten and twelve tons of oil. Her full oil fuel capacity is 1,254 tons in her regular oil bunkers, while in addition she also carries 1,145 tons in the ballast tanks, so that she could come out from home, return and then make another round voyage without replenishing her oil supply.

The exhaust from the engines is by means of pipes which are fitted on each side of the mizzen mast, the outlet being well above the deck so that all offensive oil odours are avoided.

The engine room is full of the powerful machinery which propels the vessel, consisting of Diesel motors of the four stroke cycle type, with eight cylinders, while she also has motors of the two stroke cycle type for the main engines. There are banks of eight of the cylinders on each side of the engine room, The motors develop 3,000 indicated horse power, and the auxilliary engines develop 200 indicated horse power each. The engine room, owing to the total absence of coal and ashes, is a model of neatness and cleanliness, the machinery being painted a dazzling white and the exposed metal parts gleaming like silver. For the use of the engines the oil fuel is daily pumped from the bunkers to large upright tanks at one end of the engine room level with the main deck, and from these tanks the fuel is distributed by means of small pipes to where it is needed, and, in the course of reaching its destined place in the liquid fuel pumps and cylinders is cooled by means of sea water. The machinery is kept lubricated by pumps on the interior lubricating system. The oil lubricant passes through the cylinders, piston rods, cross heads, journals and gudes and thence back to the tanks, where it is again used as fuel. The auxiliary engines work all the electric dynamos, and supply all the current used in the ship, no matter for what purpose, being passed through a transformer developing 220 volts, while the electric lights are only 110 volts. This current also supplies the power to the derricks and winches, etc There is also an air compressor of twenty atmospheres which is used in starting the engines. The starting and reversing gears are all controlled by means of levers. When the vessel is going full speed ahead on 122 revolutions per minute, and it becomes necessary to reverse the engines, this is done by a set of steel arms which clutch part of the machinery and so prevent breakage. When the ship is ready to go ahead, her going astern machinery must also be ready for action or else there would be an accident. In another part of the engine room there is a boiler used for condensing salt water and turning it to fresh. This also supplies the heat to the radiators in the various rooms, saloon, etc.

INTERNATIONAL RUBBER EXHIBITION AT BATAVIA

An International Rubber Congress and Exhibition is to be held at Batavia, Java, in September. 1914. The Congress will be held from September 7th to 12th, for the purpose of studying the scientific, economical, technical and commercial questions that concern rubber culture and the industry. The Congress will be divided into eight sections, namely:—

1. Botany and Zoology.
2. Climate and Soil.
3. Culture and Crop.
4. Preparation, etc.
5. Working policy, etc.
6. Synthetic Rubber
7. Commerce, and
8. Publications.

The Secretary of the Committee, Dr. C. J. J. Van Hall, Buitenzorg (Java), will supply any information desired concerning the Congress.

The Exhibition will be held from September 8th to October 10th, 1914. Its object is to show how the culture and preparation of rubber is conducted in the principal producing countries. An exhibition of manufactured rubber goods will also be held. Applications for space must be made to the Secretary General, before November 1st, 1913.

The Exhibition is under the patronage of H.R.H. the Prince Consort of the Netherlands.

FAR EASTERN RAILWAYS

CHINA

Shantung Railway Company.—The report of the Shantung Railway Company shows that, in spite of the considerable decrease in the building materials for the Tientsin-Pukow Railway that were carried, the traffic shows a satisfactory increase. The receipts rose to $4,240,000, from $3,510,000 in the previous year, against an expenditure of $1,180,000($1,100,000). The account in marks shows that revenue and interest total Mks. 8,990,000 (against Mks. 6,590,000), and expenses Mks. 2,460,000 (Mks. 2,040,000). After various appropriations there is a net profit of Mks. 5,596,297 (against Mks. 4,333,458). The reserves receive Mks. 529,297 (Mks. 415,086), the Government Mks. 116,235 (Mks. 51,789), and Board of Directors Mks. 103,118. The dividend of 7⅛ per cent. (6 per cent.) absorbs Mks. 4,050,000 (Mks. 3,240,000), and the profit-sharing certificates Mks. 670,000 (Mks. 270,000), or Mks. 12.50 (Mks. 5) each. There remains a balance of Mks. 122,793 (against Mks. 304,791) to be carried forward.

Pukow-Sinyangchow Railway.—The *Asiatic Daily News* has the following about this line: It is reported that a Draft Agreement has been drawn up and that as soon as it is sanctioned by the Ministries of Finance and Communications and passed by the National Assembly, a proper Agreement for the Loan will be signed by the parties concerned. The following are some of the important terms of the Draft Agreement:—

(1) *Use of the proceeds.* The proceeds of the Loan shall be used as capital for the construction of the Railway line from Pukow to to Sinyangchow.

(2) *Amount of the Loan,* £3,000,000.

(3) *Discount,* 5½ per cent.

(4) *Banking Commission,* 2½ per mille.

(5) *Interest.* 5 per cent. per annum, to be payable half-yearly.

(6) *Time of payment of the Loan.* The Bonds of the Loan shall be issued and sold within six months after the signing of the Agreement. If funds are required before the sale of the Loan Bonds, the borrower may ask the Syndicate to make advances, but the amount of such advances shall not exceed £,200,000.

(7) *Time of repayment.* The repayment of the principal of the Loan shall commence from the 11th year, and the Loan is to be repaid in 30 years. If the borrower desires to repay the loan fully before the stipulated time, he may do so by paying an additional sum of 2½ per cent.

Canton-Hankow Railway.—The railway from Hankow to Canton and Szechuan will be under the direct control of the Ministry of Communications. Vice-Minister Feng Yuan-ting has been ordered to proceed at once to Hankow to take charge of it for the government. Chen Tien-yao (Jeme Tien-yow) will remain managing director and will act at the same time as expert of the Ministry.

Railway Progress Round Canton.—Considerable progress is reported in the surveying of the line northwards from Shiuchow viâ Pingshek, and over the mountains in the Hunan province. This line from Canton is now open as far as Yingtak, though, as usual, the station is some distance from the city and the other side of the river. At this point there is some difficulty in regard to bridging a rather wide river; but when this is finished, another piece of line will be opened of considerable length, for the navvies have been laying down rails all the time, so that when the difficulty of the river is conquered, the line to the north of it, as far as Shiuchow will almost be ready for the engine.

Then from Shiuchow to Pingshek surveyors have been at work, and the line of the track has been decided upon, though there does not appear to be a great deal of eagerness to get this part done until the people of Hunan are farther advanced with their end of the work, for there cannot be much traffic between this town and Shiuchow. The country is mountainous, the people are scattered; and local trade is not extensive. The main point is, however, that there are hopes that Shiuchow will be open to the outside world by rail by the end of this year.

The Cantonese are further clamouring for permission to build a branch line from Shek-lung, on the Kowloon-Canton line, to Tsang-shing on the East River. This is a populous town, and the line would pass through a rich district, though at present a very disturbed one. Anyway, if there is a railway running directly into the midst of the district, it will improve matters. The distance is not great, something less than twenty miles, and the country is as level as a billiard table.

Yunnan Railways.—A correspondent writing to the *Shanghai Mercury* under date May 26 says:—There is some stir in railway matters again and Mr. Dawley, the American engineer-in-chief, has been re-engaged for a further term of two years. The main question again appears to be funds. On paper there is ample money to build the short road to Kochiu from Mengtze, but the parties in charge of the money have reinvested it so that of actual cash there is less than the public thinks there ought to be, so we are in a turmoil of mutual recrimination. Sundry inconvenient posters are out, asking pertinent (or impertinent whichever way you choose to take it) questions along this line and as criticism is the last thing a Chinese desires, there is much uneasiness and threats of resignation, etc.,—meanwhile no railroad work goes on.

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended May 17 are issued by the Shanghai-Nanking Railway:—

For the week.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	48,356	9,456	57,812
1912....	45,604	7,232	52,836
Increase.	2,752	2,224	4,976
Decrease	—	—	—

For nineteen weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	966,950	191,080	1,158,030
1912....	961,062	106,011	1,067,073
Increase.	5,888	85,069	90,957
Decrease	—	—	—

Week ended May 24:—

For the week.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	45,195	9,615	54,810
1912....	45,483	7,955	53,438
Increase.	—	1,660	1,372
Decrease	288	—	—

For twenty weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,012,145	200,695	1,212,840
1912....	1,006,545	113,966	1,120,511
Increase	5,600	86,729	92,329
Decrease	—	—	—

Week ended May 31:—

For the week.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	42,037	10,306	52,343
1912....	43,660	8,638	52,298
Increase.	—	1,668	45
Decrease	623	—	—

For twenty-one weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,054,182	211,001	1,265,183
1912....	1,050,205	122,604	1,172,809
Increase.	3,977	88,397	92,374
Decrease	—	—	—

Week ended June 7:—

For the week.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	45,387	10,577	55,964
1912....	41,883	18,679	60,562
Increase.	3,504	—	—
Decrease	—	8,102	4,598

For twenty-two weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,099,569	221,578	1,321,147
1912....	1,092,088	141,283	1,233,371
Increase.	7,481	80,295	87,776
Decrease	—	—	—

Anking-Chengyangkuan Railway.—It is reported that a Provisional Agreement has been signed between Kuan Kwang-non, Hong Mun-kuei and others with a Japanese firm for the construction of a line between Anking and Chengyangkuan, a distance of about 500 li. It was about eight months ago that the residents of Chengyangkuan began to organize a company to construct this railway. The approval of the Chamber of Commerce at Anking was first secured. Negotiations with the Japanese firm in question were opened up about six months ago. About the end of April, the Provincial Assembly sanctioned the construction of the line by the company that had been organized, and this sanction was endorsed by the Tutuh. The proposal met with opposition from Mr. Liu Woo-kong, the Industrial Director at Anking, who claimed that the line would interfere with the Pukow-Sinyang project. However, the proposal was forwarded to the Board of Communications, but so far, we understand, no reply has been received.

It is stated that about six weeks or two months ago, a preliminary contract was signed by the Chinese company and the Japanese firm alluded to. This contract is said to be substantially as follows:—

CLAUSE 1.—A and B make this preliminary loan agreement in connection with the Anking-Chengyangkuan Railway. The loan is for.....

CLAUSE 2.—The loan will be secured by the Rice Tax, and the proceeds of the tax will be mortgaged to B.

CLAUSE 3.—The preliminary advance of the loan will be at a discount of.....and carry interest of.....

CLAUSE 4.—A and B will work mutually and proceed with the work without undue delay.

CLAUSE 5.—A survey of the whole line will be first made, after which an engineering estimate of the cost will be submitted. B will recommend to A the necessary engineers and assistants, and A will make separate agreements with such engineers and assistants. If the men recommended are not suitable, A has the power to consult with B and change them. Salary and passage money are fixed in the agreement.

CLAUSE 6.— This preliminary loan is deposited in a bank agreed upon by A and B. The Adviser's approval must be given before this money can be drawn.

CLAUSE 7.—After this agreement is signed, A must engage B as Adviser for A's company and all the matters in regard to the railway company in reference to traffic and management must be decided upon after consultation with this Adviser. There must be a separate agreement with the Adviser.

CLAUSE 8.—After this agreement is signed, A must open two temporary offices, one in Shanghai and one at Anking, and also must make provision for an accountants' office at Shanghai.

CLAUSE 9.—If the sum lent is not sufficient, A can consult with B and B will make arrangements.

CLAUSE 10.—Work shall be started after the survey of the whole line is complete and the estimate supplied by B's engineer shall have been approved by A.

CLAUSE 11.—After the survey is made and the estimate is presented and approved, the second loan can be negotiated. This loan will be arranged by B for A.

CLAUSE 12.—The first loan is to be paid back to B when the second is paid over.

CLAUSE 13.—If after the whole line is surveyed, B should find that the loan would be unprofitable, B can cancel the agreement with A, who will pay back the first loan, capital and interest.

CLAUSE 14.—The second loan is payable as required for construction.

CLAUSE 15.—The second loan has a discount of.....and interest of.....per annum, payable each six months.

CLAUSE 16.—All the money is to be drawn and paid back at Shanghai.

CLAUSE 17.—The second loan is also to be deposited in a bank at Shanghai to be mutually agreed upon. When money is drawn, such withdrawal must be sanctioned by the Adviser.

CLAUSE 18.—The question of the repayment of the principal and interest is to be discussed after the estimate of the cost of construction has been obtained.

CLAUSE 19.—The whole of the machinery, materials, and buildings, and any other properties of the company, and also the profit working and the Rice Tax are the security to B.

CLAUSE 20.—All the materials required will be purchased for A by B by public tender, B receiving 5% commission.

CLAUSE 21.—For the construction of railway station, tunnels, bridges and other engineering work, the company will invite public tenders.

CLAUSE 22.—The Adviser has the right to recommend persons to be employed subject to the approval of the general manager and submanager.

CLAUSE 23.—The accounts of the company must be kept according to foreign method. Chinese or foreigners can be employed in the accountants' department.

CLAUSE 24.—A copy of the traffic accounts and the yearly report of the company must be sent to B.

CLAUSE 25.—The proceeds of the loan cannot be used for other than railway purposes.

CLAUSE 26.—Chinese students who have been educated in foreign countries or who have had experience in other railway companies may be employed.

CLAUSE 27.—After this agreement is signed, A cannot negotiate a similar agreement with anyone else. If before this agreement was signed, A has negotiated an agreement with anyone else, B takes no responsibility.

We are informed that the amount advanced in the first instance was nominally $50,000, but actually $48,000 and that the interest was about 7%. It is also stated that the bonds of the main or second loan were to be fixed at 91 and hat the interest was to be 7%.

This alleged agreement, we are officially informed, has not been brought before the Chinese National Railway Corporation, to which all such instruments have to be submitted. Negotiations, we are told, are still going on.

The Yuet Han Railway.—The official opening of the extension of the Yuet Han Railway to Ying Tak took place on May 10. The party, consisting of about 14 European and 800 Chinese guests, left the Wongsha Station at 8.45 a.m., arriving at Yin Tak at 1 p.m. On arrival at Ying Tak, tiffin was served in a large matshed specially built for this purpose. Photos of the principal guests were taken before the departure from Ying Tak, and the train left on its return journey at 2.45 p.m., arriving at Wongsha at 7.50. The train was in charge of the Traffic Manager, Mr. Wong, who did his best to make the outing a success. This addition to the line ought to be of great benefit to Canton, as there is sure to be a lot of traffic up and down, especially as faster trains are being put on.

Soochow-Chiahsing Railway.—Negotiations are in progress for the turning over of the Soochow-Chiahsing Railway to the Government, and it is reported that the Government intends to appoint Chung Mun-yew as the Director of this line.

JAPAN

New Japanese State Railway Locomotives.—The State Railways of Japan for their heavy grade mountain service have adopted a new type of Mallet locomotive. The engines, twenty-four of which are at present being delivered by the American Locomotive Company, are the second most powerful locomotives that have ever been put in service on a "narrow-gauge" road, and it is expected that through the employment of these large units, the operating efficiency of the heavy grade sections can be considerably increased.

The characteristic feature of the "Mallet" locomotive is that it has two separate sets of driving wheels, each complete with its own cylinders, valve gear, etc.; in reality being nothing more or less than two locomotives under one boiler. The power of a locomotive is indirectly limited by the number of driving axles which it is possible to successfully incorporate in the design while still producing a unit which will easily pass through a Railway's existing curves. The "Mallet' locomotive, by virtue of having the driving axles divided into two separate systems, the first of which is free to turn when the locomotive passes through a curve, can have practically twice the number of axles which it is possible to put under an ordinary locomotive. The new locomotives have six driving axles as compared with four, the greatest number possessed by any of the Railway's present units of motive power.

In connection with the "Mallet" design of locomotive it is interesting to note that whereas the abstract idea as to the potential possibilities of an engine of the type, was first put forth by a Frenchman, Monsieur Mallet, many years ago, it has remained for engineers of another nationality to put the idea into practical form. In 1904 the American Locomotive Company constructed its first Mallet articulated compound locomotive for the Baltimore & Ohio Railroad; and because of the ability of this engine to successfully meet the requirements of the most exacting service, the type has been introduced as a standard on practically all of the principal American railways. In addition to contracting several hundred of these engines for American railways, the American LocomotiveCompany have completed, or have under construction, engines of the Mallet type for Japanese, South Americam, South African and French railways.

Where already in service, the saving in operating costs effected by the use of the Mallet has amounted to as much as 50 per cent. as compared with the cost of operating the two ordinary engines which one Mallet universally replaces and it is to be expected that equally good results will be obtained in Japan. The railway engineers are to be congratulated for their foresight in adopting as a standard for the mountain sections, this type of locomotive, for through the employment of the engine it will be possible to not only reduce the operating expenses, but in addition to relieve, through the moving of heavier and longer trains, the traffic congestion which is particularly severe on the mountain divisions of the Imperial Government Railways.

New Light Railways.—The Imperial Government Railway Board has given charters to the Maruko Electric Railway Company in Nagano prefecture and to the Kawamiya Railway Company in Kagoshima prefecture for the construction of light railways. The Maruko Electric Railway will connect Maruko village in Ogata district, Nagano prefecture. The length of the Railway will be 5 miles, with a gauge of 3 feet 6 inches. The company was promoted by Mr. Kudo and six others with a capital of 250,000 *yen*. The Kawamiya Railway will run between Hirasa and Miyanoshiro, two villages in Satsuma district, Kagoshima prefecture. The mileage of this railway will be 19 miles and the gauge 3 feet 6 inches. The railway company was promoted by Baron S. Narahara and seventy-six others with a capital of 600,000 yen.

Railway Extension.—The new lines of railway, now under construction, will, according to Mr. Furukawa, the newly appointed Engineer-in-Chief of the Railway Board, be proceeded with as originally planned in spite of the administrative readjustments and the proposed reduction in the construction appropriations for the current year. They are expected to be completed by the end of the year and will have a total length of 240 miles, as follows:

	SECTION	MILEAGE mile.
Sendai	Kagoshima to Sendai.....	31.04
Miyazaki	Kobayashi to Aoidake	35.35
,,	Miyazaki to Kiyooka.....	5.61
Saeki	Oita to Saeki	48.58
Takashima	Kawada to Ikeda	25.27
Tadotsu	Tadotsu to Kwanonji	16.50
Tsumano	Yamaguchi to Sasame	3.58
Hamada	Imaichi, Idzumo to Nima..	26.55
Boso	Ohara to Katsuura	8.55
Hojo	Kisaradzu to Kadzusa-minato	10.55
Ganetsu	Yamato to Uwage	41.30
Murayama	Shibata to Murakami.....	20.57
Taira	Koriyama to Ono-Shin-Machi	30.34
,,	Taira to Kawasaki	18.45
Shinsho	Imadeyama to Naruko	13.37
,,	Shinsho to Sema.....	12.58
,,	Shinsho to Sakata	34.40
,,	Sakata branch line	1.53
Soya	Onikopu to Kawitombetsu..	9.39
Shimofurano	Takikawa to Shimofurano.	35.72

LIGHT RAILWAYS.

	SECTION.	MILEAGE. mile.
Wakabetsu	Rukeshibe to Shimoikutahara	18.31
Maoka	Maoka to Nanoi	7.30
Kamiiso	Kamiiso to Garyokaku	5.64
Manji	Shibuni to Manji, and from Shibusui to Takinoue	7.11
Funakawa	Oiwake to Takimoto	11.77
Nagai	Akayu to Nagai	11.49
Miyachi	Kumamoto to Minomikata ..	12.25
Inukai	Oita to Nakamuda	6.14

Receipts of Japanese Government Railways.—The receipts of the Government Railways during the month of April amounted to 10,491,219 yen, of which 5,856,695 yen was from passenger traffic and 4,634,524 yen from freight traffic. The figures show a decrease of 144,795 yen on passenger traffic and an increase of 224,681 yen on freight traffic as compared with

the corresponding month of last year. The average receipts per mile in one day was 66,87 yen which is a decrease of 1.78 yen as compared with the corresponding period of 1912.

New Railway Lines.—The Kyosei Electric Railway Company at a general meeting held recently, authorized the board of directors to raise 750,000 yen, either by a bond issue or by borrowing, for the purpose of building the Kanamachi line and a line between Ichikawa and Funabashi. The Kyosei Railway starts from Oshiage, Honjo, and proposes to reach Narita.

Japanese Railway Funds.—In regard to the expenditure to be defrayed this fiscal year for the extension and improvement of the State railways, Mr. Tokonami, President of the Imperial Japanese Railway Board, says that the estimated revenue is some 33,000,000 yen, of which 18,000,000 yen is net profit, and 15,000,000 yen advance from the Deposit Bureau. This falls far short of the expenditure required for the satisfactory improvement of the railways, which amounts to at least fifty million yen. With a fund of only thirty million yen or so placed at the disposal of the authorities therefore, much cannot be expected this fiscal year. The authorities in the Department of Finance are quoted by the *Hochi* in this connection as stating that the Railway Bureau seems to be greatly dissatisfied with the estimated revenue this year, and not without reason, for besides the extension and improvement projects to be carried out there are schemes postponed from the preceding year, the expenditure on which aggregates something like fourteen million yen. The Finance authorities being well aware of these conditions wish to advance as much to the Board as possible, but the deposits in the postal savings banks, constituting the bulk of the financial resources of the Department, have witnessed a decided decrease of late years in sympathy with the general situation of the money market. In these circumstances, the Finance Department will be unable to advance more than five million yen for the current fiscal year.

Central Railway Station.—The Chuwo Teishajo (Central Railway Station) which is now under construction, is expected to be completed before the coronation ceremonies of the Emperor next year in Kyoto, and at the same time the express trains of the Tokaido line are all to arrive at the Central, instead of at Shimbashi station, though other trains will continue to arrive at Shimbashi for some time yet.

Nara Railway Projected.—Messrs. Kunisuke Okazaki, M.P., Kozo Kaino, M.P., and some others have planned to construct an electric railway line between Kyoto and Nara with a capital of 2,300,000 yen, for the conveyance of both passengers and freight between the two cities.

No Broad Guage for a While.—Mr. Tokonami, the president of the Board of Railways, recently stated that the Government, considering the financial circumstances of the country, has decided to give up the plan for widening the railway guage. As a result of this there are to be stopped all the preparations that have been or are being pushed on for the widening of the guage, including the suspension of the construction of the branch of the Tokaido line through Atami.

Expenditure for Railway Construction.—It has been decided of late that this year's expenditure for the construction and repair of Japanese Government railways should be 43,000,000 yen, which is to be spent:—15,450,000 yen for the construction of new lines, 12,300,000 yen for the repair of existing ones, 11,300,000 yen for both factories and cars, 3,400,000 yen for electricity, and 150,000 for steamers.

Double-track System of Tokaido.—The bridge works over the river Tenryu were expected to be completed in June, and the completion of the works means the finish of the entire construction of the double system for the Tokaido line.

MANCHURIA.

South Manchuria Railway—The work of replacing the 64 lb. rails with 80 lb. rails has been commenced on the section of the South Manchuria Railway between Shuangmiaotzu and Manching. A similar work was completed between Manching and Changtu last year and between Chungku and Kaiyuan in the preceding year.

As the result of the revised service-regulations of the Imperial Government Railways, the South Manchuria Railway Company has been placed under the jurisdiction of the Imperial Government Railways so far as railway matters are concerned. The Company's other enterprises, viz., mining, shipping, harbors, electricity, gas, warehousing, hotels, etc., remain under the supervision of the Board of Colonization as hitherto.

We learn, says the *Manchuria Daily News*, that, under the sanction of the Tokyo Government, the South Manchuria Railway Co. is to raise 200,000 additional shares, amounting to Yen 40,000,000. The new shares will represent half the balance of the total authorized capital, viz., Yen 100,000,000. It may be mentioned that the present subscribed capital is Yen 20,000,000, of which Yen 16,000,000 has already been called up, the last and fourth instalment of Yen 4,000,000 having been called on June 1st. The remaining Yen 4,000,000 will be called some time during the present current year As referred to repeatedly, the two last-mentioned instalments are to be employed as part of the Company's capital expenditure for the current fiscal year, which amounts to Yen 14,100,000. Yen 2,000,000 will be set aside for the same purpose from the Company's profits for the present working year. It is to supply the deficit of a little over Yen 4,000,000 that the new shares are to be offered for subscription. From what we can glean, the Company will not invite the public to subscribe to the new shares, but is inclined to allot two shares to each share held by the shareholders on the Register. One-tenth of the new share capital, viz., Yen 4,000,000, at the rate of Yen 20 per share, will be called up for payment on September 1st.

The South Manchurian Railway workshops at Shahokou near Tairen, are now completely equipped and efficiently staffed, and have started making passenger and goods cars, which are said to be nearly as good as those ordered from the best makers abroad, says the *Japan Chronicle*. As the demand for increased carrying capacity on the railway is rising by leaps and bounds, the Company proposes to construct twenty goods cars at the workshops during the current year, and a saving of about Y. 1,000 is expected on each car. The carrying capacity of the line was raised last winter to 12,000 tons per day from 6,000 tons on the reconstruction of the railway, and will be again increased by about 6,000 tons or so when the new cars are ready for service by the end of this year.

A semi-annual general meeting of the South Manchuria Railway Company, was held at the Tokyo Chamber of Commerce. Mr. Nakamura, the president of the company, in the chair, made reports upon the business condition of the company, and then the following accounts of dividend was adopted for the latter half of the year 1912-13 :

	Yen
Profit	4,926,044
Forwarded	2,311,460
Total	7,237,514

To Wit

	Yen
Legal reserve	246,302
Dividend on shares in Government possession	2,000,000
Dividend on other shares (6 per cent.)	540,000
Special reserve	2,000,000
Bonus, etc.	300,000
To be forwarded,	2,151,212

Japanese papers report that Mr. Nakamura, the president, will resign in November, when his present term of office is to expire, and will probably be succeeded by Mr. Hiraoka, the civil Governor of Karafuto. His resignation is also expected to be accompanied by some changes among directors and some other officials of the company.

Light Railways Postponed.—The *Manchuria Daily News* is given to understand that the proposed light railway line between Mukden and Jehol, which was on a fair way to the commencement of work, will be probably deferred or abandoned for financial reasons of the central treasury, despite all the efforts of Gov. Changhsilan of Mukden and Military Governor Hsiung-hsiling of Jehol. Another light rail line between Chinchow and Taonanfu, now being surveyed by a party of Chinese engineers, as reported previously, is said to have no better chances to have work started thereon owing to the same reasons.

Dairen and Port Arthur.—In order to further facilitate the communication between Dairen and Port Arthur, the South Manchuria Railway Co. is reported to have placed an order with an American company for some locomotives to be actuated by kerosene oil. These locomotives are expected to be here by the end of this year. When they are put in service, it will take only an hour for a trip either way against an hour and a half at present. The five trips each way daily, as is on the train schedule now, may then be increased to ten trips a day.

MALAYA

Penang Hill Railway.—The *Pinang Gazette* understands that the Secretary of State's approval has been given to the scheme for the construction of a railway up Penang Hill.

Work is to be commenced immediately under the supervision of Mr. Johnson, the P. W. D. engineer who prepared the plans and who is now in Penang.

The Kedah Railway.—A correspondent writing from Alor Star gives some interesting particulars in reference to the first section of the Kedah Railway. He says:—The embankment which can be seen in a straight line as far as the eye can reach, has been thrown up for about seven miles and is about half completed, and the permanent way should be laid down with trolleys running on this section in about three months' time. The river where the railway bridge will cross is about 250 feet wide and a quarter of a mile above the footbridge. The piles are not yet driven for the bridge, but a few close to the bank are in, and a wharf for landing goods is being erected on them, while close by the winches are connected up and steam gear is available for lightering goods and pile driving. There is a drainage canal on each side of the embankment, one side of which will probably be available for paddy boats. All kinds of labour are employed, Tamils and Malays at the embankment, Chinese builders and Bengalis at the wharf and pile driving. The coolie lines are clean and airy and the quarters of the staff very dry and comfortable.

SIBERIA

The Amur Railway.—A Vladivostok telegram to the *Mainichi* states that, according to Japanese who have returned from Blagovestchensk, the construction of the Western Amur Railway between Blagovestchensk and Strye-

tensk, 900 Russian miles, has been concluded and that the trial will shortly be held, the public service being inaugurated immediately afterwards. The bridging of the rivers has proved a very difficult task, and has not yet been completed. The train services will therefore be connected by ferries for the time being.

SIAM

Hua Lampong Terminus.—The *Bangkok Times* understands that the King of Siam has approved of the plans designed by Mr. E. Manfredi, of the Royal Arts Department, for the completion of the terminus of the Royal Railway Department at Hua Lampong. The new buildings, which follow the lines of Italian classic buildings, will provide a very imposing entrance to the railway station proper. This latter building has been finished for something over twelve months, but pending the Royal decision in the design for the façade, work has been temporarily stopped. It is now understood that the building of the waiting rooms to be situated on the Rong Muang road and Klong Padung side will be proceeded with at an early date. The façade will be surmounted by the Royal Monogram and underneath will be placed a large clock.

When the houses at present standing at the entrance to the new terminus are removed it will be seen that the building has been planned on a scale worthy of the importance of the northern railway system.

GENERAL

The Siam-Tavoy Railway.—A correspondent writes to *The Burman*:—"I promised to give you my opinion on the proposed railway lines which are to eventually connect with the Siamese Railway system, at Ban Pang on the River Me Klawng.

"Two alternative lines are proposed, one of which is aligned from Moulmein via Mudon, thence across a gap in the Taungmyo range to Ule, then crossing the Ataran River to Three Pagodas at Paya-thonzu, a distance of 108½ miles. This takes the line to within 240 miles of Ban Pang. The other is via Tavoy to Amya, 120 miles from Ban Pang. From Three Pagodas a loop can be form d on the Tavoy line by connecting it with Ye, ying direct east and west. The line to Three Pagodas will go across a tract of country in which mining for tin and wolfram is going on, and which is now being extensively utilized for the cultivation of cotton and rubber. As I told you in my last, Pya-thonzu lies at the base of a mountainous tract of neutral territory between Siam and the Tenasserim Division known as Kyaukkaung. Thither proclaimed offenders from here as well as from Siam fly for refuge. The line to Three Pagodas will, there fore, be advantageous both from an economic as well as an administrative point of view, while the other line, except for a shortness of the distance by 120 miles, has no such claim. There is an ancient Talaingi Road from Three Pagodas to Ye, by which the escaped convicts from the Andamans tried to reach Kyaukkaung a few years back."

Burma-China Railway.—The question of a railway from Burma to China, which has been raised once more by the Liverpool and Manchester Chambers of Commerce, who are preparing to take the matter up with the Secretary of State, came before the Burma Chamber of Commerce at their last meeting at Rangoon.

The Chairman explained that he had gone into this question and found that there were three possible railway routes from Burma to China. The first of these was a line from Bhamo to Tengyueh, a distance of 120 miles. This line might conceivably pay a small return on capital outlay, but its ultimate extension to Talifu was not hopeful because the country beyond Tengyueh was extremely difficult, and there was no particular trade to be tapped. The second possible route was the Northern Shan States Railway from Mandalay past Maymyo and on the Lashio. This was not a promising line, and there were those who felt that it should never have been built at all. The third possibility of a railway connecting Burmah with China was to be found in the Southern Shan States line from Thazi to Taunggyi, which might be extended eventually into China via Kengtung. This line deserved close attention as it would pass through a rich country of rolling plains possessing a soil capable of producing crops of almost any description. Moreover, this route probably afforded the easiest alignment into China and would possibly merit construction sooner or later, but the present unsettled state of China, particularly on the Burma frontier, rather forced railway proposals into the background at the moment.

It was resolved that the Liverpool Chamber be informed that the committee of the Burma Chamber have read in the Journal of the London Chamber of Commerce of the interest the Liverpool Chamber is taking in the matter of a railway from Burma to China, and will fully support any approved scheme that may be adopt d for the purpose of furthering railway connection in that direction.

TRAMWAYS

Singapore Electric Tramways.—The accounts of the Singapore Electric Tramways show an excess of revenue over expenditure of £34,439, the profit for the year, after charging debenture interest, depreciation and royalty paid, being £5,358. Compared with 1911, tramway revenue shows an increase of £1,446. There were 398,080 more passengers carried in 1912, than in 1911, the car mileage being 29,698 less. After lengthy negotiations with the Municipal Commissioners of Singapore, the company has been able to secure an extension of the arrangement under which it supplies current for lighting and power purposes.

More Bogie Cars for Tokyo.—The Tokyo Tramway system has at present 150 bogie cars running each day, and 30 more are expected shortly to arrive from abroad, while 100 more have recently been ordered abroad. On their arrival, which is expected by the end of this year, they will surely add a great deal to the facilities of the tramway system in the city.

Shanghai Electric Construction Co., Ltd.—The directors' report for the year to December 31, 1912, stated that the accounts show a profit of £24,727, which compared with £14,139 for 1911. Including the amount brought forward from the preceding year, the total standing to the credit of profit and loss account, before making any appropriations, was £28,028. There had been transferred to reserve for renewals account £8,500, and there had been applied in reduction of the preliminary expenses account £1,554, leaving a disposable balance of £17,974. The directors recommended the payment of a dividend of 5 per cent. for the year (less income-tax), absorbing £16,000, leaving to be carried forward £1,974. The percentage of loss by exchange on subsidiary coinage was higher in 1912 than 1911, but had recently shown a tendency to decrease. The loss under this head for the year was £23,937, and was almost equal to 7⅛ per cent. on the capital of the Company. The sanction of the Municipal Council of Shanghai had been obtained for a new type of motor car, and the rolling stock is being increased this year by 15 motor cars and 10 trailers.

Shanghai Tramways

The returns of the Shanghai Tramways (Foreign Settlement) for five months ended May 31, 1913, are as under:—

	1913. $	1912. $
Effective receipts (after deducting loss on subsidiary coinage)	346,276.09	313,301.85
Passengers carried	17,270,360	15,710,639
Car miles run	1,099,619	1,123,730

The loss by depreciation of subsidiary coinage for the period was $94,462.98, equal to 22.76 per cent. of the gross cash collected on the cars, as compared with $96,521.91, equal to 25.13 per cent. for the corresponding period last year.

Week ended May 21, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss on subsidiary coinage)	17,355.94	15,181.11
Passengers carried	884,149	783,916
Car miles run	53,410	52,762

The loss by depreciation of subsidiary coinage for the week was equal to 23.43 per cent. of the gross cash collected on the cars as compared with 25.76 per cent. for the corresponding week last year.

Week ended May 28, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss on subsidiary coinage,)	14,878.78	14,802.46
Passengers carried	761,466	732,701
Car miles run	51,884	54,021

The loss by depreciation of subsidiary coinage for the week was equal to 23.44 per cent. of the gross cash collected on the cars as compared with 25.21 per cent. for the corresponding week last year.

Week ended June 4, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss on subsidiary coinage)	15,897.79	15,300.01
Passengers carried	817,282	773,463
Car miles run	54,385	52,637

The loss by depreciation f subsidiary coinage for the week was equal to 23.54 per cent. of the gross cash collected on the cars as compared with 25.08 per cent. for the corresponding week last year.

Week ended June 11, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss on subsidiary coinage)	19,598.53	15,581.42
Passengers carried	1,027,802	800,503
Car miles run	57,455	53,427

The loss by depreciation of subsidiary coinage for the week was equal to 23.44 per cent. of the gross cash collected on the cars as compared with 25.32 per cent. for the corresponding week last year.

Peak Tramway Co., Ltd. (Hongkong).—The report of the Directors for the year ending 30th April, 1913, states:—

The Net Profit for the twelve months, after deducting Directors' Fees and General Managers' Remuneration and providing for loss on subsidiary coins, amounts to	$34,947.57
To which has to be added the balance brought forward from last account	3,402.74
Making available for appropriation	$37,350.31

The Directors recommended that a dividend at the rate of 8 per cent. per annum be paid to shareholders, absorbing $24,000, that $12,000 be transferred to reserve fund, and that the balance of $1,350.31 be carried to a new profit and loss account.

MINING

Kailan Mining Administration.—The output of the Kailan Mining Administration's mines for the week ending May 24, amounted to 36,135 tons and the sales during the same period, to 37,769.81 tons.

Week ending May 31, output 37,140.66 tons and the sales during the same period amounted to 35,583.16 tons.

Week ending June 7 output 34,431.83 tons and the sales during the same period amounted to, 36,880.39 tons.

Week ending June 14, output 31,588.98 tons and the sales during the same period, to 33,175.81 tons.

Colorado Mining Co (P.I).—This company has declared a dividend of ten per cent. and has carried forward P.100,000.

Penchihu Coal.—The *Manchuria Daily News* hears that contracts have been signed for the sale of 100,000 tons of Penchihu coal to Japan, 50,000 tons to Shanghai, and 100,000 tons to Chosen and Manchuria, all during the present fiscal year. It is said that the Chinese warships having their base about Shanghai have also placed an order with the colliery management. Altogether demands for this coal have increased on all sides. The daily output of the colliery has now been raised to about 1,000 tons.

Philippine Exploration Co.—The result of the work on the Gumaos property (P.I.) during the month of April, was as follows: Gold recovered 1,140 oz.; approximate value P.42.00. Dredge worked for 25 days, of which 7 days were expended in working through tailings.

Kyushu Mining Co.—At the Kyushu Mining Company's regular meeting the following accounts were to be submitted :—

Net Profit	38,821.63
Brought over from last account	14,213.60
Total..	53,034.69
Legal reserve..	1,950.00
Second reserve	3,890.00
Carried to next account	47,194.69

It was expected that at the conclusion of the regular meeting an extraordinary meeting will be called to consider a proposal to float a loan to the amount of 1,300,000 *yen*, bearing 7 per cent. interest, with a view to supplying a deficiency in the working capital of the company.

INDUSTRIAL

Activity in Paper Market.—The recent increase in the demand for paper has produced, it is said, much activity in the Japanese paper market, and to meet this state of affairs, many companies are contemplating increasing their manufacturing capacity. For instance the Fuji Paper Milling Company is enlarging two of its mills in Shizuoka and Hokkaido, and it has the intention to further expand its business at the cost of 1,000,000 yen or so.

PUBLIC WORKS

Tokyo Sewerage System.—The present repairing work of the sewerage system in Tokyo was undertaken in 1911 to be completed in 1915 at the cost of 6,130,000 yen, but at a recent meeting of the Aldermanic Assembly this expenditure was increased by 670,000 yen and the period of repairing works also extended by two years.

Hospital at Cebu.—Plans have been submitted by consulting architect William E. Parsons to Dr. Victor G. Heiser, director of health, for the communicable diseases hospital which is to be erected at Cebu and operated in connection with the southern islands hospital. The building, when finished, will be one of the most handsome in Cebu and will cost about P60,000.

IRRIGATION, WATERWORKS, ETC.

Wuchang Water Supply.—A contract has been signed with the Syndicat Sino-Europeen for a complete water supply for the city of Wuchang, the capital of the Province of Hupeh. The contract provides for the erection of a complete works which will have a capacity of 4,000,000 gallons of water to commence with. The intake will be in Yang-tsze River, and the water tower will be located on Serpent Hill in the centre of the city. The estimated cost of the work is Tls. 1,500,000, and the whole contract is expected to be completed within two years.

PERSONAL

Sir John Jordan, the British Minister at Peking, left for England early in June, on furlough.

Dr. Wu Ting-fang, at the request of President Yuan Shih-kai, visited Peking in June. Dr. Wu is said to have been offered the post of Premier, while other reports state that he is to go to Washington as Ambassador.

We regret to record the death of Herr Rump, who was appointed Director of the Chinese National Loan Bureau. It is understood that Mr. Pfeiffer, of the Deutsch-Asiatische Bank at Shanghai, has assumed the duties connected with the post.

The Central China Post understands that the following appointments have been made for the German section of the Hankow-Szechuan railway:—Mr. Clement as Secretary to Mr. Linow, Engineer-in-chief; Mr. Fuchs, formerly of Wuchang, and Mr. Rump as surveyors.

Mr. H. F. Merrill, Commissioner of Customs at Shanghai, has been granted long leave, and has handed over charge of the Shanghai Staff to Mr. F. S. Unwin.

Mr. A. W. U. Pope, C. I. E., General Manager of the Shanghai-Nanking Railway, has left on Home leave. Before his departure Mr. Pope received numerous presentations and addresses of esteem and goodwill from the Chinese Chambers of Commerce of the towns served by the Railway, and from other organisations.

The Hon. Mr. Wickersham, ex-Attorney General in the Taft Administration with Mrs. Wickersham, has been visiting Tokyo and Peking.

The chief of the Chinese postal department, M. Piry, left by the Siberian route on leave recently and Mr. F. A. Aglen, Inspector-General of Customs, will take a short furlough soon. Senor Pastor, Spanish Minister to China, has returned to Peking.

Sir Everard Fraser, K.C.M.G., H. M. Consul-General at Shanghai and Lady Fraser have left for Home. Sir Everard will be away for eight months.

Mr. H. von Heidenstamm, Engineer to the Huangpu Conservancy, has left on a brief furlough.

Among the recipients of honours on the occasion of the birthday of King George of England were:—Mr. B. F. Alston, who has been appointed in charge of the Legation in Peking during the absence on leave of Sir John Jordan, who was created a Companion of the Order of the Bath; Mr. S. Barton, Chinese Secretary to the Legation, and Mr. W. P. Ker, Commercial Attaché, who had conferred upon them Companionships of the Order of St. Michael and St. George. Mr. Pollock, of the legation staff, also received the C.M.G.

Dr. Gatrell of Peking, has received from the President the 4th Chiaho Order.

The *Journal de Pekin* states that Mons. de Martel, secretary of Embassy, will succeed Mons. Fr. Georges-Picot, who is going on six months' leave, at the French Legation, Peking, and is expected to arrive early in August. He is a nephew of the celebrated Countess de Martel, the "Gyp" of French journalism, and has been in the diplomatic service since 1901.

M. Mazot, Assistant Manager of the Banque de l'Indo-Chine at Peking, has been appointed French Adviser to the Audit Department temporarily, but it is said to be doubtful whether M. Pardoux will ever take up the post.

Mr. Kingoro Nonomura, a director of the South Manchuria Railway Company, will represent Japan at the West Europe Railway Traffic Congress held at Moscow. Afterwards he will proceed on a tour of inspection through other European countries.

The Danish Minister to Peking, H. E. Count P. von Ahlevelt Laurvig has left for Europe on three months' leave.

Mr. Arthur Hyde Lay has been appointed British Consul at Shimonoseki with Hiroshima, Yamaguchi, Fukuoka, and Oita Prefectures as his jurisdiction; while Mr. Thomas Joseph Harrington has been given a similar post at Tamsui, with jurisdiction over Taiwan and the adjoining islands.

During the absence of Mr. A. W. U. Pope, C. I. E., General Manager of the Shanghai-Nanking Railway on leave, Mr. E. R. Morriss will act as General Manager and Mr. J. D. Read will act as Traffic Manager of the Railway.

Public Notification

CHINESE GOVERNMENT RAILWAYS

Shanghai-Nanking Railway

1. In the exercise of my authority as Managing Director of the Shanghai-Nanking Railway, I hereby give Notice that the public use of this Railway for the carriage of both Coaching and Goods Traffic is, and will be, till further notice, governed by, and subject to, the Bye-Laws and Regulations issued for the conduct of the same and exposed in the Premises of the Company, extracts thereof being posted in the vehicles in use.
2. Copies of such issues are available to the public on application to the Administration.
3. The substance of paragraph 1 of this notification will be printed on the backs of all Railway tickets, Goods Receipt Notes and similar documents as a condition of their issue to the public.

M. Y. Chung,
Managing Director.

Dated 5th June, 1913.
Managing Director's Office,
Shanghai.

FAR EASTERN RAILWAYS

CHINA

Chekiang-Kiangsi Railway.—A Hangchow telegram to the *Minlipao*, dated the 26th June, reports: Tang Shou-shen, the President of the Chekiang Railway Administration, has returned to Hangchow after inspecting the proposed line between Chanchan of Chekiang and Yuehshan of Kiangsi in view of connecting the line in Chekiang with that of Kiangsi.

The Kiangsu Railway.—The Ministry of Communications has deputed Chung Wen-yao and Chang Shu-jung to proceed to Kiangsu to take over the charge of the Shanghai-Kashing Railway, the ownership of which has been transferred to the Government, and Mr. Mai Yu-sheng will be the provisional representative to manage for the present all the accounts in connection with the Company.

The Engineering Office of the east end of the Lung-Tsing-U-Hai Railway is established at Tungshan-hsien, Hsuchow, and the Director Shih has appointed Mr. Chen Chung-yun, Secretary of the Ministry of Navy, to be the Chief of the office Mr. Chen has taken over charge of this office and it is expected that the work of construction will soon commence.

Canton-Hankow Railway.—A correspondent wrote from Hengchow, Hunan, on June 21, as follows:—Mr. Wilson, the chief engineer of the Canton-Hankow Railway for this vicinity, arrived in Hengchow over a month ago, together with his assistant, Mr. Chifford, and a host of Chinese assistants. They are to determine the course of the railroad from Hengshan (at the foot of the sacred mountain, Nanyoh), some fifty miles north of here, to Leiyang, some fifty miles south of us. They have already commenced the work of surveying and planting strong permanent stakes which will mark the final decision in regard to the course of the railroad. The engineers are taking no summer vacation and hope to have this division of the road staked out by next Christmas. They give us the hope that in three or four years we will actually see trains running between Hankow and Canton.

There will probably be no violent opposition to the building of the railroad in Hengchow fu. In regard to the feelings of the gentry, I am not informed, but so far it is evident that the common people hail the coming of the "iron road" gladly.

Machine Shops for Hankow.—the *Cologne Gazette* reports that some French and Belgian capitalists are making arrangements for purchasing the necessary ground at Hankow for the purpose of erecting machine shops for the construction of Railway Locomotives, carriages, &c.

Hankow-Ichang Railway.—A correspondent wrote to the *Central China Post* on June 17 from Anlu, Hupeh, as follows:—During the last few days a surveying party for the Hankow-Ichang railway has arrived at Anlu. At their head is a German. A proclamation issued locally states that, after consulting with an eminent German firm of engineers, it had been decided at headquarters to try a more southerly route than the one previously surveyed, which went through Kwanghsui, Hsiangyang, Kingmen and on to Ichang. The route at present being surveyed is stated to be from Siaokan, where it joins the Peking line, through Yincheng, Teian (probably not the town itself), Kingshan, Anlu, then on to Kingmen and Ichang. In this case on the west of the Han the direction will differ little from that of the northerly route, but the distance from Hankow to Ichang will be considerable shortened. Naturally the local population is considerably excited over the prospect of a railway coming right into its midst, but so far there seems to have been no unfavourable comment or suggested opposition.

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended June 14 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	48,067	17,001	65,068
1912....	41,715	11,862	53,577
Increase.	6,352	5,139	11,491
Decrease	—	—	—

For twenty-three weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,147,636	238,579	1,386,215
1912....	1,133,803	153,145	1,286,948
Increase.	14,833	85,434	99,267
Decrease	—	—	—

Week ended June 21

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	42,854	19,209	62,063
1912....	40,490	9,452	49,942
Increase.	2,364	9,757	12,121
Decrease	—	—	—

For twenty-four weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,190,490	257,788	1,448,278
1912....	1,174,293	162,597	1,336,890
Increase	16,197	95,191	111,388
Decrease	—	—	—

Week ended June 28:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	42,411	13,677	56,088
1912....	36,703	8,542	45,245
Increase.	5,708	5,135	10,843
Decrease	—	—	—

For twenty-five weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,232,901	271,465	1,504,366
1912....	1,210,996	171,139	1,382,135
Increase.	21,905	100,326	122,231
Decrease	—	—	—

Week ended July 5

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	43,766	12,319	56,085
1912....	37,441	7,266	44,667
Increase.	6,325	5,093	11,418
Decrease	—	—	—

For twenty-six weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,276,667	283,784	1,560,451
1912....	1,284,437	178,365	1,426,802
Increase.	28,230	105,419	133,649
Decrease	—	—	—

Week ended July 12

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	41,753	11,024	52,777
1912....	37,702	9,317	47,019
Increase.	4,051	1,707	5,758
Decrease	—	—	—

For twenty-seven weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,318,420	294,808	1,613,228
1912....	1,286,139	187,682	1,473,821
Increase.	32,281	107,126	139,407
Decrease	—	—	—

Tsingkiangpu-Tungchow Line.—AChinese report is as follows:—Some time ago a loan was negotiated between Messrs. Chang Chien and Li Sheng-tsai on the one hand and a certain Belgian on the other for the construction of a railway between Tsingkiangpu and Tungchow. The negotiations resulted in the signing of a preliminary agreement which was to come into effect on the condition that the transaction should receive the sanction of the Ministry of Communications. The said Ministry, however, refused to sanction the project on the ground that the proposed line conflicted with a section of the Haichow-Laichow-Railway. The disapproval of the Ministry made the signed agreement null and void; and the project was consequently abandoned altogether by the parties concerned.

Likin on Railways.—With a view to encouraging trade a Presidential Mandate was issued ordering the abolition of the Hatamên likin branch office in Peking as well as the offices in Fengtai, Machang, Nankou, Kalgan, Kangchuang, Hsuanhuafu and other places situated on the Tientsin-Kalgan Railway. The likin offices was to be closed from July 1. The Ministry of Finance has to pay $100,000 to meet the falling off in the provincial budget of Chihli. The Mandate leaves it to the discretion of the other provinces to introduce the same reform or not.

Cheng Tai Railway.—A Peking telegram reports that on 4th July the Russian Minister sent a despatch saying that the time of repayment of the loan of £400,000 for the Chengtingfu-Taiyuanfu Railway have passed and if the sum cannot be paid a portion of that railway must be placed under the Russian control.

Nationalizing the Railways.—A Peking telegram said that the railway between Shanghai and Kashing and the Hunan Railway would be state owned from 1st August, when all the accounts would be cleared.

The Pu-Hsin Railway.—With regard to the 5% Pu-hsin Railway Loan it is only through successive negotiations between the Ministry of Communications and the British Minister that the present result has been arrived at. The Ministry sometime ago sent the original contract to the Cabinet with a despatch requesting its approval and transmission, after approved, to the House of Representatives. The Cabinet, it is reported, submitted this bill to the House. The despatch of the Ministry reads as under:—

On January last the recommendation of this Ministry that Sheng Yun-pei be appointed to render preparations on the Pu-hsin Railway Affairs was duly approved by the President. To trace the beginning of this railway we must go back to the 24th year of the reign of Kuangsu of the Manchu regime when the British merchants demanded that they be

allowed to contract for the construction of one of the 5 lines. By the order of the Tsung-li Yamen the Chief Railway Company was authorized to propose and sign a preliminary agreement consisting of five articles which provided that the line shall commence from Pukow, Anhui to Hsinyang, Honan and that all details regarding the loan shall be dealt with in accordance with the Shanghai-Nanking Railway. Since then the British Minister has repeatedly requested that a formal Contract be signed; during the reign of Hsuan-tung he requested more urgently and after the inauguration of the Republic the representative of the British Syndicate Mayers (?) again brought up the matter.

As a preliminary agreement has been signed in the Manchu regime the matter cannot be disregarded nor be longer deferred. Moreover, the proposed line connects the two main lines, Tsin-pu and Kin-han and runs through the fertile plains of Anhui and Honan; the traffic of the former as well as industries of the latter will be greatly facilitated by its construction. If men proficient in the Railway management and well acquainted with the geological features and products of these two provinces should be deputed to handle this matter, one of the diplomatic questions is finished and the plan of communication will be facilitated. Hence it has been decided to proceed with the matter.

Since the appointment of Sheng Yun-pei the representative of the British Syndicate has been approached with a view to draw up a contract for a loan. At first the representative they should be. However, in a time when the large loan was just concluded, the recognition of different Powers has not yet been accorded, and all financial questions bear an intimate relation with politics, many difficulties have been encountered and greatest pains have been taken to arrive at even the present result, and solve an Anglo-Chinese question pending for 15 years. The British Minister Sir John Jordan is also desirous to see this matter speedily carried out.

As this matter facilitates diplomatic relations, it should be quickly approved by the administrative and legislative organs so as to conclude it and maintain our credit. The proposed contract consisting of 25 articles is hereby submitted both in English and Chinese for approval.

Railways in Yunnan.—The British Consular report on the trade of Mengtsz for 1912 says that the problem of the construction of the Yunnan-Kwangsi railway occupied public attention in 1912, and the new Government has evinced a keen desire to put the work in hand as soon as the necessary funds can be obtained. At the present moment the trade of Yunnan passes to and from the coast by the French railway which, owing to the great cost of upkeep, is obliged to charge exorbitant, and in some cases, almost prohibitive, freight rates. The construction of a line connecting the province of Yunnan with the West River will of necessity force the French to lower their tariff, thereby introducing a healthy competition

Baldwin Mallets for Japanese State Lines

persisted that the matter be carried out according to the precedent of the Shanghai-Nanking Railway as stated in the preliminary agreement. But Sheng proposed (1) that although the funds required for the construction will be raised from British sources according to the original agreement, the contract should be further considered, and (2) that as the Tsin-pu Railway has been completed, Pukow should not have two large stations and the line should be altered. Owing to these two proposals considerable difficulty has been experienced during the negotiations and after the return of the said representative to London for instructions a contract consisting of 25 articles has been drafted and is termed as "5% Pu-hsin Railway Loan." It has been carefully examined by Sheng together with the Ministries of Finance and Communications and amended by the said representative. The loan amounts to a sum of 3 million pounds with interest of 5%, a commission of 5% and a term of redemption of 40 years. The details governing the materials for construction and the administration have also been provided. In comparison with that of the Shanghai-Nanking Railway this contract affords many more advantages to the Chinese. Besides this the syndicate agrees to make advances, the Director-General has the liberty of locating the line, the amount of commission is reduced and the bonus is dispensed with. In general we have obtained all we can expect and the right mean is attained; but in consequence of the provisions of the preliminary agreement, the terms of the contract are not so satisfactorily perfect as which is at present lacking. Indeed, as in 1912 Hongkong took 86 per cent. of the trade of Mengtsz, which is the market for Eastern Yunnan, there is every likelihood of a large part of the trade being diverted to the new route. The line was surveyed from Poseh in Kwangsi at the head of navigation on the West River as far as Kutsingfu in Yunnan by Taotai Lo in 1911, and at the time of writing (0th March, 1913), the survey of the portion between Kutsingfu and Yunnanfu is being completed by Mr. Dawley, the American engineer in the employ of the Yunnan Government, who has found a practicable, though difficult, route into Kweichow. The line will strike northwards from Poseh into Kweichow passing through Singyifu, then westwards to Loping in Yunnan, northwards to Kutsingfu, and finally westward to Yunnanfu *via* Malungchow and Yanglin.

The much discussed branch line from the French railway at Pishihchai (Mengtsz) to the tin mines at Kochin has not yet materialised. The line, which would be some 35 miles long, was carefully surveyed in 1912 by the American engineers, Messrs. Dawley and Hawks, but the Yunnan Government has been unable to decide whether it shall be built by the mine-owners at their own expense, by the Government as part of a branch line to connect Linanfu with the French railway, or by the French Railway Company. Of the three alternatives, perhaps the last offers the best solution of the difficulty, as the cost would be less and the workmanship better—the line being built by French engineers who have had experience of local conditions when constructing the main line from Tongking to Yunnanfu.

Mr. Dawley has gone to America on leave, but he expresses the greatest confidence in the ultimate future of Yunnan.

The Kiangsu Railway.—Agreement made between the Kiangsu Railway Company (hereinafter called the Company) represented by Yang Ting-tung (hereinafter called the Representative) of the one part, and the Ministry of Communications (hereinafter called the Ministry) of the other part, for the nationalization of a Railway line belonging to the Company, under the following terms and conditions:—

Article 1.—The Company hereby agrees to surrender completely to the Government, according to the resolution of the Shareholders' Meeting of the Company, all the properties and privileges of the Shanghai-Kashing Line, *i.e.* the Railway Line from Shanghai to Fengching, which shall be controlled and managed direct by the Ministry; and to cancel the concession of all privileges previously granted to the Company by the Government.

Article 2.—The Ministry hereby agrees to refund to the Company all the Capital of the line, namely:—Proper Shares $3,476,523 and Interest Shares $1,073,895 (the latter amount is not yet considered settled until proper calculation is made), by issuing to the Company a number of Bonds of fixed dates. This Capital shall be repaid in five years from the date of the taking over of the line, and the repayment shall be made in three instalments in each year, in accordance with the separate schedule. It is, however, understood that any of the instalments of each year may be made before the stipulated time, provided two months' previous notice shall be given by the Ministry to the Company to this effect.

Article 3.—From the date of the taking over of the line, the Capital which has not yet been repaid by the Ministry shall also bear yearly interest at the usual rate originally decided upon by the Company, and this interest shall be paid by the Ministry at the same time together with the repayments of the Capital, when the instalments become due.

Article 4.—All Bonus or Founder's Shares which formerly existed shall be null and void. They shall not be considered as Capital nor shall they be entitled to the repayment of principal or the payment of interest.

Article 5.—Of the 14 Regulations regarding Deposits of the Kiangsu and Chekiang Railways, drawn up by the former Board of Posts and Communications on the 15th day, 3rd month, of the 34th year of Kuang Hsu in the late Ching Dynasty, all those which refer to the Kiangsu Railway shall be annulled from the date of the taking over of the line.

Article 6.—After the closing of the Company, an organ of account-calculation shall be established. How this organ is to be established shall be decided separately.

Article 7.—All the liabilities and assets which really belong to the Company shall be transferred to the Ministry, but the amounts of

them shall be determined by those contained in the 6th Report of the Company.

Article 8.—After the signing of this Agreement and before the taking over of the line, the Company shall be fully responsible for all the properties, incomes and expenses of the Company itself.

Article 9.—With the exception of cases having special reasons, all the terminable agreements and contracts of employment, transportation, lease, etc., entered into between the Company and other parties, shall continue to be in force until the expiration of their respective terms.

Article 10.—On the signing of this agreement, the Ministry shall depute officials to the Company to calculate carefully the accounts, and the Company shall instruct its responsible officers to prepare detailed lists of properties together with all the books, documents and vouchers, and to submit them to the Ministerial Officials for comparison and signature.

Article 11.—It is mutually agreed that the taking over of the line shall be effected on the 1st day of the 7th month, of the 2nd year of the Republic.

Article 12.—The Ministry shall not be responsible for the repayment of any money that has not been stipulated in this agreement.

Article 13.—Should any detailed procedure be required for carrying out the terms and conditions of this agreement, it shall be decided by the Representative and the Ministry after mutual agreement.

JAPAN

Japanese State Railways.—The rough draft of the accounts of the Imperial Railways for the first fiscal year of Taisho (April, 1912, to March, 1913) is nearly ready The result of the year's working was unexpectedly good compared with the returns for several years previously. The gross receipts are returned as Yen 111,020,000 and the expenditure as Yen 92,100,000, including Yen 500,000 added to the reserve fund, showing a net profit of Yen 19,600,000 and an increase in the latter of Yen 9,500,000 compared with the estimate. On the Kyushu Railway, the returns for which are included in the above totals the gross receipts were Yen 15,966,276 and the expenditure Yen 6,002,459, showing a net profit of Yen 9,063,810 —an increase on the estimate of Yen 528,554.

Baldwins for Japanese State Lines.—Eighteen locomotives were ordered in July, 1912, by the Imperial Government Railways of Japan from the Baldwin Locomotive Works of Philadelphia for heavy freight service between Tokyo and Kobe and have recently been placed in actual service. The size of the engines was limited by the narrow gauge (3'-6") and the weight was limited by the existing bridges, but maximum dimensions and capacity were desired under these limitations, in order to haul the heaviest possible trains. To meet these requirements the Imperial Government Railways selected the Mallet Articulated Compound type, equipped with a high degree superheater. The Baldwin Locomotive Works designed the locomotives throughout for lightness consistent with strength. For this purpose parts made of cast steel are liberally employed; the driving and tender axles are made of acid open hearth steel, bored hollow for lightness and heat treated, the driving and tender tires are also heat treated, thus securing the highest elastic limit and greater uniformity in the structure of the metal.

The locomotives in general design as well as in detail are thoroughly modern and represent the best practice in the United States; they are among the heaviest locomotives ever built for a narrow gauge Railway.

The principal dimensions and weight are as follows:

Gauge of track	3'-6"
Cylinders, high pressure.	16" diameter
" " "	24" stroke
" low pressure,	25" diameter
" " "	24" stroke
Boiler pressure	220 lbs per sq"
Boiler diameter	58 inches
No. of tubes	2¼ diam. 101
"	5½ " 16
Length of tubes	16'-4"
Heating Surface of Firebox	122 sq. ft.
" " Tubes	1,341 sq. ft.
Total	1,463 sq. ft.
Superheating Surface	323 sq. ft.
Grate Area	21.2 sq. ft.
Diameter of driving wheels	49 inches
Rigid wheel base	9'-0"
Total Wheel base of Engine	26'-2"
Total, Engine and Tender	48'-0"
Weight of Engine in Working Order	142,650 lbs.
Weight of Engine and Tender Working Order	205,000 lbs.
Capacity of Tender	3,240 U. S. Galls.
Coal Capacity	3 gross tons.

New Light Railways.—The Railway Board has granted a charter to the Onsen Electric Railway Company, promoted by Mr. Yokoyama and 62 others, for the construction of a light railway to connect Kanan village, Enuma district, with Komatsu, Nobi district in Ishikawa prefecture, and also to connect Naya village, Enuma district, with Dohashi of the same district in Ishikawa prefecture. The length of the light railway is 14 miles with a gauge of 3 feet and 6 inches. The capital of the company is 600,000 yen.

A charter was also granted to the Onoda Light Railway Company, promoted by Mr. Kasai and nine others, for the construction of a light steam railway connecting Suye village, Atsusa district, with Takachiho village of the same district in Yamaguchi prefecture. The length of the railway is 3 miles with a gauge of 3 feet and 6 inches. The capital of the railway company is 150,000 yen.

The Railway Board has granted a charter to the Shiratana Light Railway Company for the construction of a light railway, 14 miles in length, connecting Shirakawa, Nishi Shirakawa district, with Tanakura, Higashi Shirakawa district in Fukushima prefecture.

A charter was also granted to the Nagao Railway Company for the construction of a light railway to connect Fusokame village, Koshi district, with Tochio town of the same district in Niigata prefecture. The length of the light railway is 11 miles and 20 chains.

MANCHURIA

South Manchuria Railway.—The S. M. R. Traffic Returns for the month of June were as follow:—

	Yen.
Aggregate	1,430,798
Daily Average	47,693
Increase on corresponding month of last year	11,004

At the last general meeting of shareholders the South Manchuria Railway Company proposed the issue of the second shares, this proposition being approved by the meeting. The first call on the new shares to the amount of 4,000,000 yen will be paid in by September 1st. This amount will be applied to new works to be undertaken during the current fiscal year. This sum alone, however, being insufficient for these new undertakings, the company is expected to make calls for the last instalment on the first shares (40 yen per share) probably towards the middle of December, according to the state of the money market. It is not expected that the second instalment on the new shares will be called before June next.

Kirin-Changchun Railway.—Mr. Wu-wu, Director of the Kirin-Changchun Railway, has given the following information in regard to the line:—The Kirin-Changchun Railway now earns about Y50,000 a month. The winter traffic being much heavier, the total annual receipts may be safely put at Y800,000, which, we hope will be easily raised to Y1,000,000 when the tunnel through Tumenling Pass is completed and the Line is put in full working order. At present the management is receiving a government supply of S. Y60,000 per month. We make shift to keep things going on this government supply and the net profit of the Line. The tunnelling work through Tumenling will be started next September. The work will be prosecuted through the winter as far as possible on the plan of finishing the work by June, 1914. The road-bed is now being ballasted to make it firmer.

THE PHILIPPINES

Manila Railroad Co.—This company has awarded a contract for a station at Paco to cost P 120,000. The building will be about 170 feet long and 60 feet deep. The building will be constructed entirely of reinforced concrete, and when finished will be one of the most beautiful structures in the city. The Manila Railroad Company expects the traffic through the Paco station to increase rapidly during the next few years. The lines serving there are the main northern line, the southern line which, when extended, will extend to Albay, the Antipolo line, and the Cavite line.

MALAYA

Malayan and Siamese Systems.—The *Straits Echo* in a recent issue recapitulates the arguments advanced by it in favour of the linking up of the Malayan and Siamese railway systems via Kedah, and does so because of "various important changes in the situation—notably the formation of a Bangkok Chamber of Commerce which will be able to voice with authority the views of the commercial community in the Siamese capital and the disappearance of some of the strong vested interests deeply concerned in the development of Trang."

The conclusion of the article runs:—

"This question, while of great interest to Penang and Kedah, is of vital and paramount importance to Siam. Rapid communication with Europe is the avowed desire of the mercantile community of Bangkok, which has long complained of its isolated position and the inconveniences, delays, and losses which result from the fact that at present the mails from Siam have to be carried round the Peninsula by steamer. These drawbacks would be altogether removed if the mails were merely transhipped at Penang and placed in a train which would land them in Bangkok without any further handling or transhipment. They will only be partially alleviated if the Kedah line is allowed to stop short a few miles from the Siamese boundary and the scheme, outlined above, of shipping the mails from Penang to Trang, and transferring them there to a railway for transit to Bangkok, is adhered to. We can hardly imagine that the merchants and people of Bangkok are so blind to their own interests as to allow the matter to be finally settled in that sense and the East coast route adopted, without making energetic representations in the quarters to which the question will be referred for a definite decision."

PUBLIC WORKS

Bridge at Kyoto.—The reconstruction of the Shijo bridge, Kyoto, Japan, which has been going on for nearly a year and a half, has at length been completed, with the result that the natural beauty of Kyoto has acquired a considerable addition by the creation of a triumph of modern engineering skill. The cost of the work is said to have been something over Y 200,000. The foundations of the bridge are of iron, cased with concrete, while the bridge itself is of granite, measuring 300 feet in length and 72 feet in width. Elaborate arrangements for illumination have also been set up.

THE CANTON-CHUNGKING RAILWAY

The outbreak of the rebellion has, at all events temporarily, prevented the conclusion of an agreement for the financing and construction of the railway from Canton to Chungking, with an extension to Lanchow. The preliminary agreement, which was signed on July 4, was between the Chinese National Railway Corporation and Messrs. Pauling and Co., Ltd., who were to build the line by contract. In many respects the preliminary agreement was the most favourable for China yet concluded, and it is hoped that the political disturbances will not prevent its ultimate adoption.

GENERAL

Intercontinental Through Passenger Traffic.—The Intercontinental Through Passenger Traffic arrangements between Japan and Berlin, Paris and London were to come into effect on 10th August,

The through traffic stations in Japan are as follows:—

Shimbashi (Tokyo), Hiranuma (Yokohama), Kyoto, Osaka, Kobe, Shimonoseki, Moji, and Nagasaki.

The through fares from Shimbashi are as follows:—

To	1st Cl.	2nd Cl.
Berlin	Yen 369.58	Yen 258.94
Paris	417.25	291.55
London	436,78	309.83

Through tickets are issued only for 1st and 2nd class express passengers, and are available for three months. A through passenger is offered the option between the two routes via Vladivostok and Dairen, also between the undermentioned routes:—

For Berlin:—
1) via Moscow, St. Petersburg, and Wierzbolowo.
2) via Biatka and Alexandrowo
3) via Moscow, Warsaw, and Skalmierzyce.

For Paris: Berlin, Achen, Verviers, Liege and Jeumont.

For London:
1) via Berlin, Achen, Liege, Ostend, and Dover.
2) via Berlin, Hanover, Hook van Holland, and Harwich.

The arrangements were agreed upon at the International Railway Conference at Brussels in the summer of 1911.

TRAMWAYS

Shanghai Tramways

The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of June, 1913, and for six months ended June 30, 1913, with figures for corresponding periods last year.

	June, 1913.	6 months ended June 30, 1913.
Effective Receipts . .	$77,138.87	$423,414.96
Passengers carried. . .	4,074,306	21,344,666
Car Miles run	256,692	1,356,311
Loss by depreciation of subsidiary coinage . .	21,919.67	116,382.65
Percentage of loss by depreciation of subsidiary coinage . .	23.35	22.87

	June, 1912.	6 months ended June 30, 1912.
Effective Receipts. .	$67,378.70	$380,680.55
Passengers carried . .	3,477,937	19,188,576
Car miles run	228,892	1,352,622
Loss by depreciation of subsidiary coinage . .	21,184.91	117,706.89
Percentage of loss by depreciation of subsidiary coinage	25.44	25.18

Week ended June 18, 1913:—

	1913.	1912.
Effective receipts (after deducting loss on subsidiary coinage). . . .	$	$
	19,064.99	16,097.92
Passengers carried . . .	1,018,885	832,312
Car miles run	64,423	53,194

The loss by depreciation of subsidiary coinage for the week was equal to 23.28 per cent. of the gross cash collected on the cars as compared with 25.41 per cent. for the corresponding week last year.

Week ended June 25, 1913:—

	1913.	1912.
Effective receipts (after deducting loss on subsidiary coinage). . . .	1912. $	1912 $
	17,412.67	15,235.44
Passengers carried . . .	924,051	794,204
Car miles run	60,995	52,885

The loss by depreciation of subsidiary coinage for the week was equal to 23.28 per cent. of the gross cash collected on the cars as compared with 25.60 per cent. for the corresponding week last year.

Week ended July 2, 1913:—

	1913.	1912.
Effective receipts (after deducting loss on subsidiary coinage). . . .	$	$
	17,743.43	15,783.93
Passengers carried . . .	939,460	828,035
Car miles run	60,826	53,799

The loss by depreciation of subsidiary coinage for the week was equal to 23.28 per cent. of the gross cash collected on the cars as compared with 25.76 per cent. for the corresponding week last year.

Week ended July 9, 1913:—

	1913	1912
Effective receipts (after deducting loss on subsidiary coinage). . . .	$	$
	18,057.72	15,566.14
Passengers carried . . .	958,909	809,754
Car miles run	57,653	53,627

The loss by depreciation of subsidiary coinage for the week was equal to 23.23 per cent. of the gross cash collected on the cars as compared with 25.77 per cent. for the corresponding week last year.

Week ended July 16, 1913:—

	1913.	1912.
Effective receipts (after deducting loss on subsidiary coinage)	$	$
	18,147.10	15,678.93
Passengers carried . . .	949,828	824,514
Car miles run.	59,357	55,415

The loss by depreciation of subsidiary coinage for the week was equal to 22.80 per cent. of the gross cash collected on the cars as compared with 25.71 per cent. for the corresponding week last year.

MINING

Colorado (P. I.) Mines.—The Colorado mines have been turning out from P.30,000 to P.40,000 each half month and work is reported to be progressing rapidly in developing the ore. The Colorado mines have long since passed the experimental stage and are turning out dividends to the stockholders regularly. The mines, located in Masbate, are considered the best that the Philippine Islands have as yet developed.—A new filter installed at the Colorado Mining Company's mill is expected to increase the output of gold materially. The capacity of the mill is enlarged by from 800 to 1,200 tons and a greater percentage from the dissolving values is saved.

Mining Enterprises in South China.—The United States Consul-General, George E. Anderson, of Hongkong, reports that a considerable revival of mining enterprises in South China districts near Hongkong seems to be going on mostly in the southern portion of Kwangtung and in Kwangsi Provinces. These provinces are known to contain gold and silver, as well as antimony, which is already mined; tin, which is mined in a crude way to a small extent, and other and less valuable metals. The prospects of mining and the activity of prospecting has led to the establishment of an assay office in Hongkong by an American trained Chinese mining engineer. The office is equipped for all ordinary assay work. Several mining undertakings of some note are now in hand by various native concerns. One, operating for gold and other metals in Kwangsi Province, recently put in considerable pumping and other machinery, mostly of American make. Another Canton concern, with an American-trained mining engineer for manager, is operating for gold, and has recently put in a stamp mill and considerable modern American machinery. A Hongkong company is planning operations in the southeastern portion of Kwangsi. There is considerable prospect of active mining work being undertaken this summer in Hunan Province. A large company has been formed, and proposes to open a coal mine and also to undertake mining for tin, lead, gold, silver, and other metals.

Mining in the Philippines.—The following statistics of mineral production in the Philippine Islands for the year 1912 have been compiled by the division of mines, Bureau of Science:

	1911.		1912.		Increase (+) or Decrease (−).	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		a. *Pesos.*		a. *Pesos.*		a. *Pesos.*
Metallic:						
Iron—metric tons . .	73	29,159	141	49,272	+ 68	+ 20,113
Silver—fine ounces. .	3,383	3,606	7,121	8,664	+ 3,738	+ 5,058
Gold —fine ounces. .	9,190	379,906	27,582	1,140,424	+18,392	+760,518
Copper—kilograms. .	1,100	600			− 1,100	− 600
Non-metallic:						
Coal—metric tons . .	20,000	130,000	2,720	20,200	−17,280	−109,800
Clay products . . .		450,000		453,000		+ 3,000
Lime		90,000		92,026		+ 2,026
Sand and gravel . .		477,344		468,750		− 8,594
Stone		655,795		651,049		− 4,746
Salt—metric tons . .	18,333	550,000	19,147	574,511	+ 814	+ 24,511
Mineral waters—liters.	300,000	60,000	264,871	55,849	−35,129	− 4,151
Total		2,826,410		3,513,745		

a. One peso Philippine currency is equal to 50 cents United States currency.

Tokyo Electric Light Co.—This company made a profit of Y1,950,261.21 for the last term, paid a dividend of 10 per cent. and carried forward Y450,255.01.

Hakodate Water Power Company.—This company made a profit of Y57,504.48 for the last term, paid a dividend of 10 per cent. and carried forward Y13,542.07.

Tokyo Calico Weaving Co.—This company made a profit of Y126,895.39 for the last term, paid a dividend of 10 per cent. and carried forward Y19,129.33.

Sino-Japanese Flour Mill Co.—This company made a profit of Y80,518.92 for the last term, paid a dividend of 10 per cent. and carried forward Y42,027.87.

Kyushu Water Power Co.—This company made a profit of Y72,518.50 for the last term, paid a dividend of six per cent. and carried forward Y69,366.72.

Yokohama Electric Tramway Co.—This company made a profit of Y146,941.92 for the last term, paid a dividend of 8 per cent. and carried forward Y1,009.29.

Shanghai Dock and Engineering Co., Ltd.—The report of the directors for the year ended April 30 last stated that the net profits, including the amount brought forward from last year, and after paying all charges and allowing for all known liabilities amounted to Tls. 180,116.29. This amount the directors recommended be dealt with as follows:—

Dividend of Tls. 3 per share, absorbing Tls. 165,600.00, and carry forward to new account Tls. 14,516.29.

Indo-China Steam Navigation Co., Ltd.—The report of the directors for 1912 stated that the anticipation expressed last year of a good year's trade in China has been realized. The volume of trade on the Indo-China section has also been very heavy, but the continued keen opposition there has severely militated against profits. Except for this latter circumstance the earnings for the year under review would probably have been exceptionally good. The credit side of the revenue account (including £7,530 15s. 7d. brought forward) amounts to £116,521 14s. 5d.; and after allocating £54,140 8s. 8d. to depreciation, writing off £2,000 from expenses of debenture issue, and providing for all outgoings, there remains a balance of £39,836 15s. 7d. Out of this, arrears of preference dividends amounting to £14,876 14s. 0d were paid in April last. From the balance remaining, viz., £24,960 1s. 7d. it is proposed to pay the dividend of 6 per cent. on the cumulative preferred shares for the year 1912, which will absorb £14,876 14s. 0d., leaving £10,083 7s. 7d. to carry forward.

THE BRITISH CIVIL SERVICE ESTIMATES.

The British Civil Service Estimates for the year ending March 31st, 1914, have been issued, and we give below the usual details concerning the votes relating specially to China, Japan, and the Far East. The figures enclosed in parentheses are last year's votes, and are given for purposes of comparison.

DIPLOMATIC AND CONSULAR BUILDINGS.

Under the heading of "New Works, Alterations, Additions, and Purchases (including Furniture in connection therewith)," are the following votes:—Bangkok: Sanitary works, £480. Changsha: Erection of new Consulate, £300; Dairen: Erection of new Consulate, £4,000 (£2,000), out of estimated cost of £7,500, leaving £1,500 required for completion. Hakodate: Rebuilding Vice-Consulate, £2,000 (£2,000) to complete; Shanghai: Erection of new stables, £600 (further required to complete £650); additions to Supreme Court and Consular offices, £1,000 (£3,000) to complete; Swatow: Rebuilding Consular jetty, £850; Hankow: Rebuilding servants' quarters and stables, £1,200; Osaka: Acquisition of site and erection of Vice-Consulate, £500 (£4,000 required to complete); Peking: Provision of water supply, heating system, etc., etc., £5,500 (£1,200 required to complete); Peking Erection of houses for Chinese Secretary and Commercial Attaché, £5,000 (£2,000 required to complete); Peking; Sanitary alterations, etc., etc., £1,500; Shanghai: Installation of baths, etc., at Consular Jail, £140. Acquisition of new sites in China, Japan, and Korea, £500. The maintenance of buildings in the Far East is included in a general vote.

PERSONAL

Herr Knipping has taken over the duties of German Consul-General at Shanghai.

Dr. Behrend, of the Mannheim Commercial High School, has been appointed adviser to the South Manchurian Railway to succeed Professor Wiedfeld.

Herr Bauer, a German subject, has been appointed by the President to be his "Adviser for Technical Questions."

Mr. Arnhold, a German subject, has been appointed Adviser of Banking Affairs to the Ministry of Commerce and Industry.

Mons. R. J. Audap, the new manager of the Banque de l'Indo-Chine at Tientsin, has arrived and taken over from Mons. Bazen. Mons. St. Pierre replaces Mons. Casenave at Peking, the latter being now on leave.

Mr. C. M. Bishop, of the American Consulate at Tientsin, has been transferred to Chefoo as Vice-Consul. Mr. G. F. Bickford has been transferred to Newchwang as Vice-Consul and Mr. C. P. McKiernan has been transferred to the American Consulate at Shanghai, whither also Mr. J. Davies has been transferred.

Mr. Yamaza has succeeded Mr. Ijuin as Japanese Minister in Peking.

Mr. A. C. Eriksen, Chief Accountant of the Great Northern Telegraph Company in Shanghai, has been appointed adviser to the Chiaotungpu (Ministry of Communications) on telegraph affairs. He has abready assumed his duties.—

Dr. Hauer, Second Chinese Secretary of the German Legation, has returned to Peking.

Herr Stolle of the German Consular Service, has returned from leave, and has been appointed to Mukden.

The Chinese Government Railways

Tientsin-Pukow Line

In addition to the bi-weekly express and daily local service, which shall continue unaltered, a daily direct through service from Pukow to Tientsin and *vice versa*, will be inaugurated from the 1st of May, 1913, with first, second and third class passenger cars but no sleeping cars attached. Dinner service will be provided.

From same date booking for third class passengers on express trains will be discontinued, but a first class passenger may book not more than one-third class servant ticket for which accommodation will be provided.

TIME TABLE

UP TRAIN.

STATIONS	Mon. & Fri. Express	Daily Through Mail Service
Pukow .. .. Dep.	9.00	9.40
Hsuchowfu .. „	17.44	19.44
Tsinanfu .... „	2.30 Tues. & Sat.	7.00 next day
Techow ..... „	5.31	9.55
Tientsin Cen.. Arr.	10.43	15.35
„ „ Dep.	10.53	16.05
Tientsin East. Arr.	11.03	16.15

DOWN TRAIN.

STATIONS	Wed. & Sat. Express	Daily Through Mail Service
Tientsin East. Dep.	13.00	9.40
Tientsin Cent. Arr.	13.10	9.50
„ „ Dep.	13.20	10.20
Tsinanfu .... „	21.54	19.30
Hsuchowfu .. „	6.41 Thurs. & Sat.	7.05 next day
Nanhsuchow.. „	pass	9.03
Pukow ..... Arr.	15.15	16.41

For further particulars apply to the Traffic Manager.

BY ORDER.

The British Engineers Association

London Office, Caxton House, Westminster.

Peking office to be opened on 1st August at the house recently occupied by Messrs. Wardroper and Co., in the

Wang Fu Ching Ta Chieh.

Enquiries to be addressed to:—

Capt. T. C. FitzHugh, M. V. O.
Chief Commissioner.

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. X. SHANGHAI AND MANILA, AUGUST 1913 No. 3

PEKING-KALGAN-TATUNG-FU RAILWAY

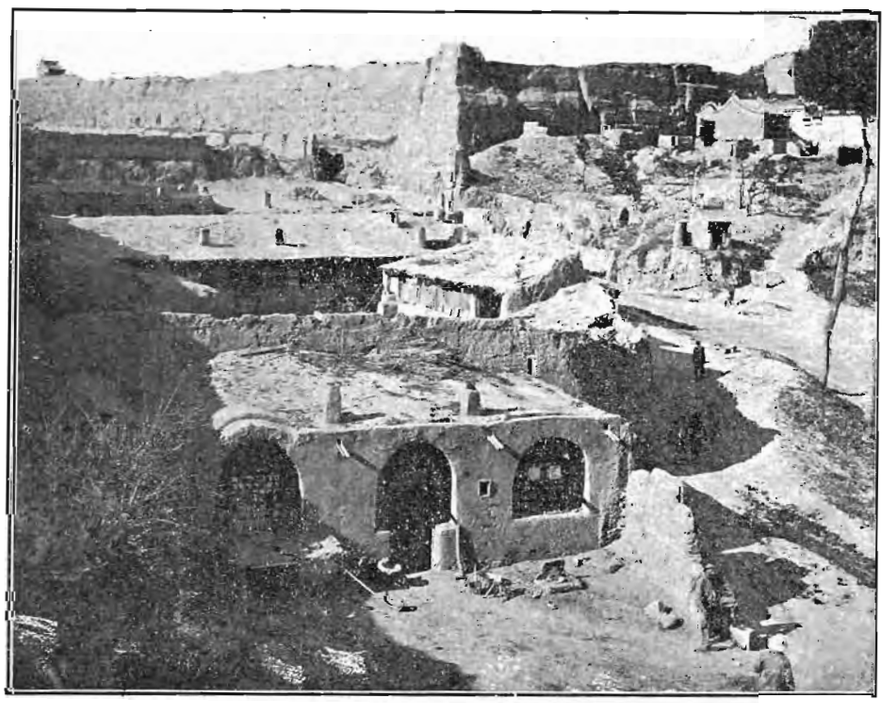
WORK ON THE CHANGSUI EXTENSION

Construction work on the extension of the Kalgan line to Tatung-fu has progressed so well during recent months that the Engineer-in-chief, Mr. K. Y. Kwong, is hopeful of seeing railhead at the river opposite Tatung-fu, in north-eastern Shansi, by October of this year. The financial difficulties confronting the Government will no doubt lead to an abandonment for some time of the original idea of pushing the line through to Suiyuan in the north-western corner of Shansi, close to the Mongolian frontier.

At present the extension is open to traffic as far as Yangkuohsien, some 80 miles from Kalgan. The total length of the line from Peking to Yangkuohsien is 204 miles. Tatung-fu is out 20 miles from Yangkuohsien, giving a total of some 224 miles. This is the longest stretch of railway in the country built solely by Chinese engineers with Chinese capital and operated by Chinese railway men.

It is an important route which opens up the vast areal producing lands of the north of Chihli and Shansi provinces, and brings the products of the rich rolling downs of Inner Mongolia in touch with valuable markets. Already the line has had a marked effect upon the development of the country through which it passes, and was the means last year of taking about a million sterling into Shansi in return for products shipped to southern markets. Such a thing had never been dreamt of by the farmers, and they now look forward to greater returns as facilities are developed. In the March issue of the FAR EASTERN REVIEW (pages 456-457) special mention was made of this encouraging effect of the construction of the line.

Recently a representative of this journal journeyed as far as Tatung-fu and found the construction work well in hand. The engineers were extremely keen, and had solved the various problems which confronted them in a highly creditable manner. There was no slumming; no leaving of things to chance—and perhaps excessive care was exercised in those territories where heavy rainfalls are destructive, to preserve the line from the ravages of flood. Usually the Chinese are credited with erring on the wrong side in this respect, but not so Mr. Kwong and his associates. In their embankments, their bridges and waterways they have proceeded only after most minute investigation, and have allowed for most abnormal flood visitations. The levels, too, were adopted only after exhaustive surveys. Faced with heavy gradients and varying country—a rise almost the whole way from Kalgan—they were compelled to be cautious to adopt none but a route that would give not only a minimum in grade but also a minimum in cutting, and much time and labor were spent in this connection. A maximum grade of one in one hundred and thirty was ultimately secured, with a minimum curve radius of 1,500 feet.



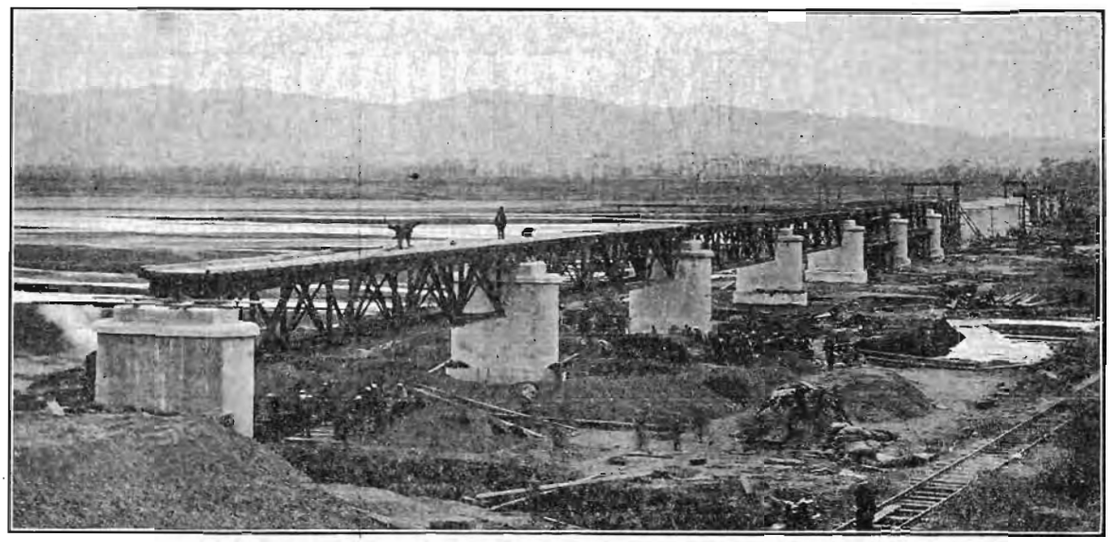
PEKING TATUNG-FU RAILWAY.—One of the mud-walled cities which dot the country in North Shansi. The walled city is in the back-ground. The houses in the foreground are built of mud in a loess chasm.

At a point near Tatung the line reaches a height of 4,000 feet above sea level, the up grade from Kalgan being continuous for 90 miles. Then there is a drop to Tatung-fu, which is 3,445 feet above the sea.

Altogether the waterway provided for on the extension totals on the first division 9,310 feet and on the second division some 5,695 feet.

The longest bridge is over the Yu river, seventeen spans of 100 feet each being required to cross to Tatung-fu. Across the Ta-yang river there is a bridge of 17 spans of 100 feet each; the river at Kalgan, is crossed by five 100 feet spans, while the Yangho is also crossed by a bridge of similar length. These are the most important bridges on the line, but in several places large concrete culverts have been built to carry embankments across the loess chasms.

Cuttings vary from 60 feet downwards. They are mostly on the first division of the line; while the second division is characterised by embank-



Construction of the Ta Yang-ho Bridge

ments, the highest running to 60 feet. The most difficult of these have been necessitated by loess gulches with which the country is scored.

The track is of standard gauge with an 85 lb. rail, chiefly the product of the Hanyang ironworks at Hankow, on the Yangtsze River.

The sleepers are Japanese hardwood.

Stations are about ten miles apart, and at every station water tanks have had to be provided in case of emergency owing to the scarcity of water. The station buildings have been built on the plans of those of the Kalgan line.

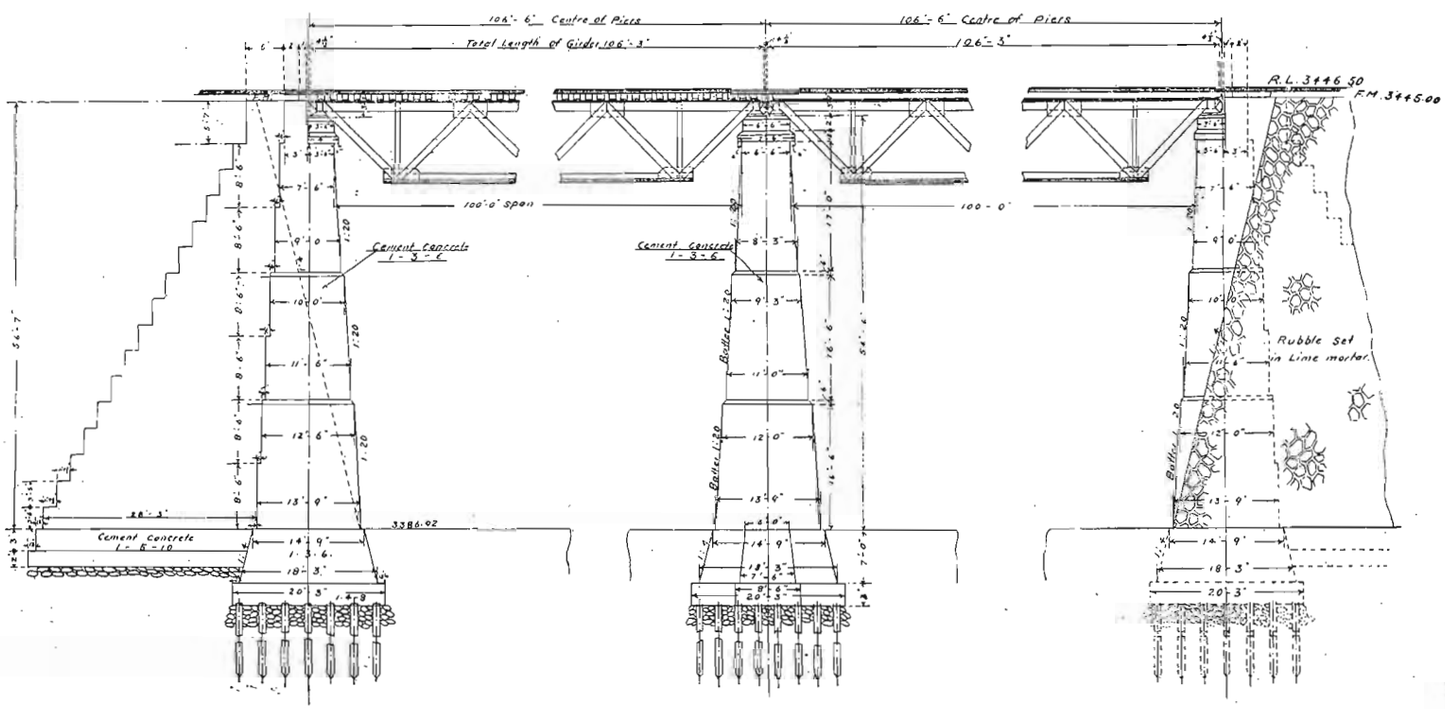
The Changsui Extension is a continuation of the Peking-Kalgan line and derives its name from the first syllable of Changkiakow (the Chinese name of Kalgan) and the first syllable of Suiyuan, in north-western Shansi, the objective of the line.

Survey work on the first portion of the route began in September, 1908, and by September, 1909, the line was located for a distance of fifty miles, as far as Tiencheng.

Construction work was commenced in April, 1910, and railhead reached Tiencheng in June of 1911.

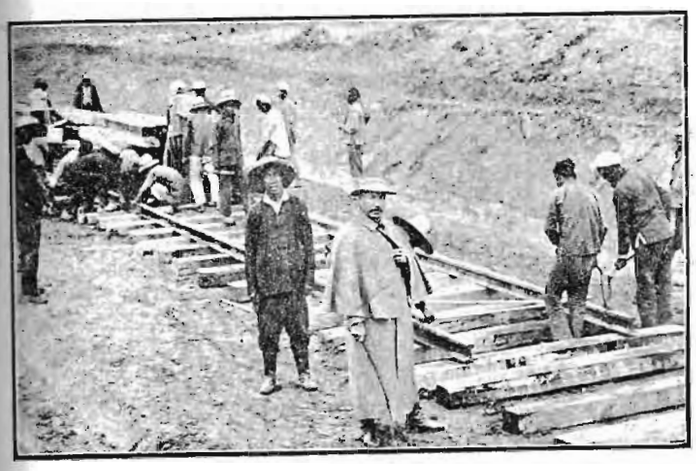
Mr. Jeme Tien-yu, who was the chief engineer of the Kalgan line, was in charge of the work on the extension until this time. He was then transferred to Canton; work having been suspended on the extension owing to a change of policy on the part of the then Minister of Communications, Mr. Tang Shao-yi. Mr. Tang felt that the money necessary for the continuation of the line to Suiyuan, or even Tatung, could be better utilised on a line from Kaifeng to Haichow, and when the construction work to Tiencheng was finished the workmen were disposed of.

However, the departure of Mr. Tang Shao-yi from the Ministry of Communications, and the appointment of



TATUNG-FU BRIDGE

Side elevation of the bridge now being constructed across the Yu River at Taiyuan-fu. It is estimated the concrete necessary for the piers and abutments will be something like 350,000 cubic feet. The total weight of one pier is calculated at 1,299.745 tons, made up of concrete, 1,018.105 tons; track, 92.64 tons; girders, 37 tons; rolling load, 213 tons. The bearing on each pile is calculated at 15.45 tons where there are 34 piles to a pier, and 17.07 tons where there are 76 piles.



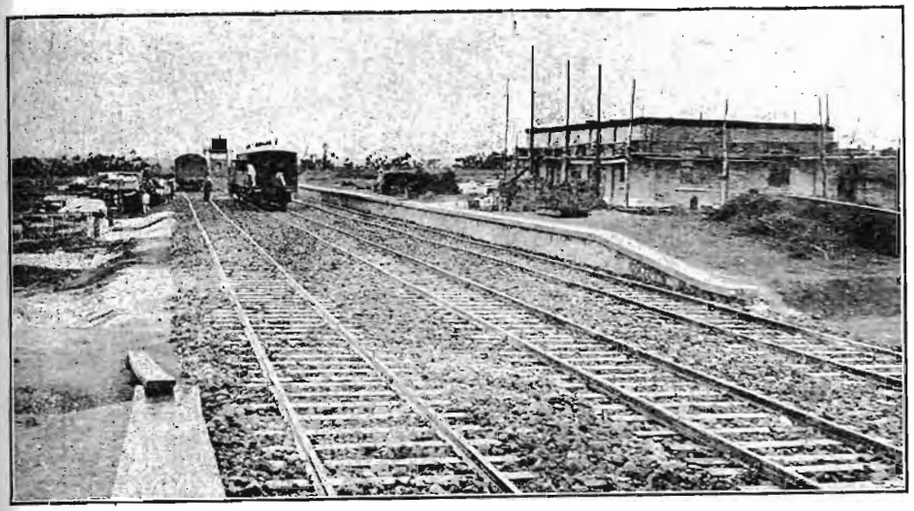
PEKING-TATUNG-FU RAILWAY.—Railhead—Mr. K. Y. Kwong, Engineer-in Chief, in foreground

PEKING-TATUNG-FU RAILWAY.—Spikedrivers at work

Mr. Chen Shi-lin, Assistant Engineer-in-Chief, Changsui Extension

Mr. K. Y. Kwong, Engineer-in-Chief, Peking-Kalgan-Tatung-fu Railway

Mr. Chai Chao-tin, District Engineer, Changsui Extension



PEKING-TATUNG-FU RAILWAY.—The station and yard at Wang-kun-jen-tun, in course of construction

PEKING-TATUNG-FU RAILWAY.—Rock cutting on the bank of the Yang River

Mr. Shen Kung-pao to succeed him, saw a reversal of orders, and after nine months of idleness work was resumed. By October, 1911, the survey had been completed from Tiencheng to Tatung-fu, so when orders were given for a resumption of work in July of 1912 the location was speedily carried out and workmen were engaged at different localities in August.

Mr. K. Y. Kwong was then placed in charge of the extension, and he has held that position ever since with marked ability—as well as being Engineer-in-Chief of the Peking-Kalgan Line.

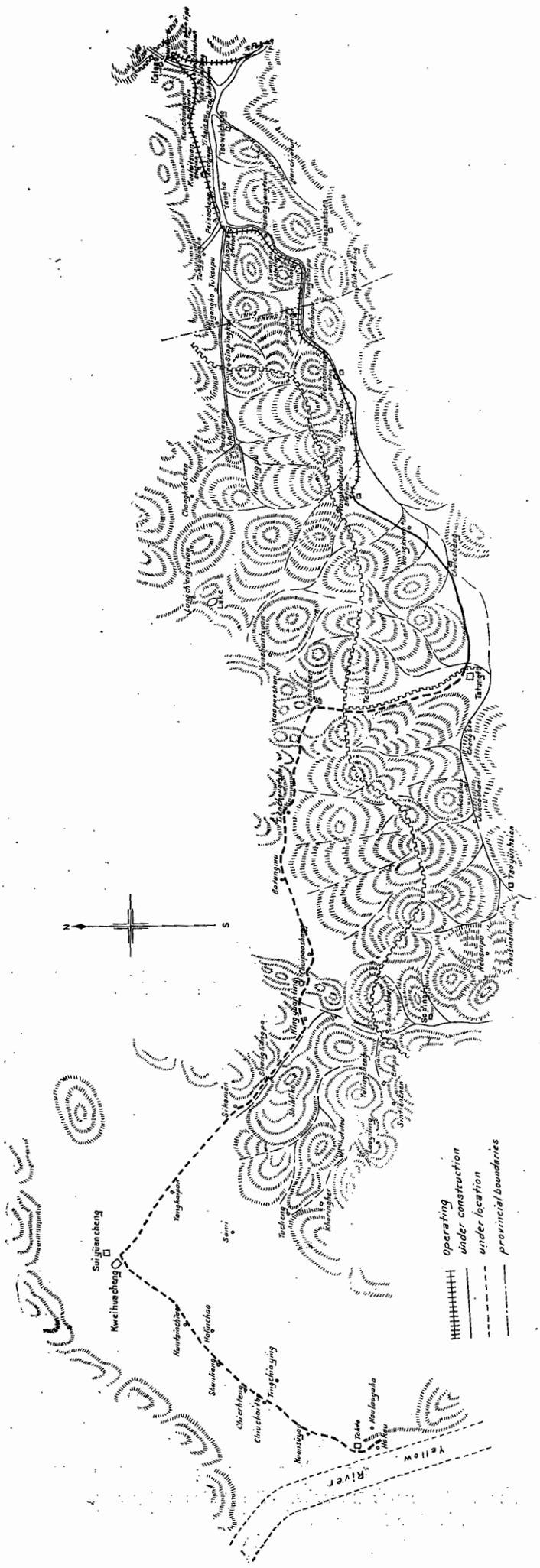
By November of 1911 railhead had reached Yangkuo-hsien, the present terminal station for passengers, and unfortunately work was here again brought to a standstill by the Revolution. Almost a year elapsed before a resumption could be made on even a small section of the work, and it was not till April, 1913, that operations were fully resumed on the balance of the route to Tatung. As many men as available money would permit were employed and railhead is at present in practical sight of Tatung, whilst the roadbed to the river is virtually completed.

Immediately after leaving Kalgan the extension crosses the river over a five span bridge and skirts the hills heading south-west. To the left is an extensive valley under cultivation, which later on merges into other valleys of even wider extent, until the more open country of Shansi is reached.

Heavy rock cuttings, retaining walls and embankments, are a feature of the line for many miles. After the crossing of a fifteen span bridge over the Tan Yang-ho, Chaikowpu station is reached; the old walled city first being seen. Through barren and burnt bridges the route emerges again on the Yang-ho, which it follows a distance of some 35 miles. At the walled city of Yung Chia-pu the first glimpse is obtained of the portion of the Great Wall system which marks the province of Shansi. The wall here is of mud and can be seen threading its sinuous way along the foothills; looking as compact as when first erected, some hundreds of years ago, except in places where the violent mountain torrents have torn their way through.

A few miles from Yung Chia-pu the train runs parallel with the wall and continues so for many miles until that ancient barrier to the Mongols mounts the ridges and disappears in the mountains. A well cultivated valley, which has Tienchen for its principal city and station, is traversed and still on an up grade the line crosses the crests of low hills well above the wide green valley near Yangkuo-hsien. The work in this region is easy cutting or low embankment.

Leaving this station by construction train the line still climbs; this time through a poor country, all cultivated but bearing very poor crops. For per-



THE CHANG-SUI (KALGAN-SUIYUAN) RAILWAY.—This sketch shows the route of the extension from Kalgan to Tatung-fu and the proposed line to Suiyuancheng and Hokou on the Yellow River. The line will not actually touch Suiyuan. The station will be at Kweihua-chang, a market town a little to the south.

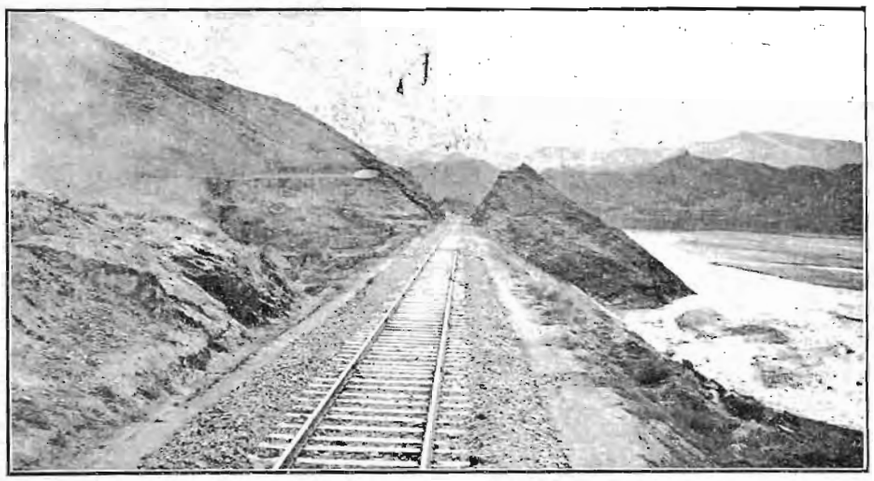
haps twenty or thirty miles the country is boulder strewn. There are no water-courses here. When the heavy storms come the torrents which rush down from the bare mountains simply sweep over the country covering it with gravel and boulders and in the rainy season provide a constant menace to the safety to the line, which has to be carried on an embankment to prevent burial in silt.

The valley which is kept to the left is now broken by a low ridge which the line obliquely crosses, the crest (4,800 ft.) being the highest point on the route. The station here is called Shao Chia-tsao, which is reached through a cutting, and then the descent to Tatung takes place over rolling country and across numerous loess clefts which score this region. These constitute the greatest difficulty, for otherwise the line is easy of construction. One or two deep cuttings through loess and, as the river is neared, through gravel, are necessitated to reduce the height of the bridge which will cross the river Yu to Tatung. Most of these cuttings are now completed, and work has already been commenced upon the bridge foundations.

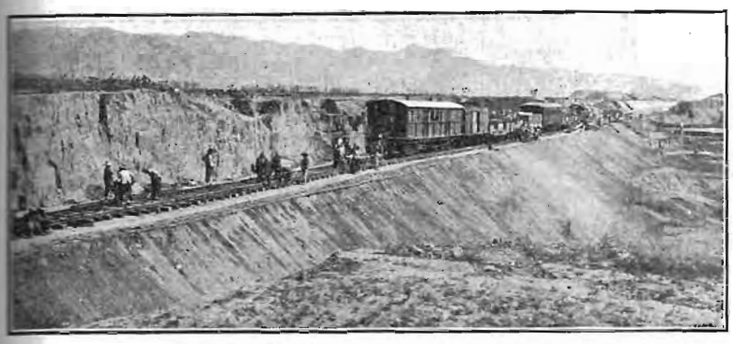
Several pile drivers have been installed on the bed of the river, which contains little water in the dry season, and by the time the rain commenced much work had been completed. Under each pier from 46 to 60 piles will be driven—according to the nature of the ground—Oregon pine piles 33 feet in length being used. Sheathing piles will be driven round these and with the excavation of the gravel the piles will be sawn down to permit of a foundation of ten to twelve feet of concrete being laid to carry the piers.

The bridge will, as stated before, be carried on seventeen concrete piers, and the track will be 52½ feet above the bed of the stream. An accompanying illustration furnishes details of the structure. It is expected the bridge will be completed by the end of spring.

The bridge carries the line to the east of Tatung-fu city, which lies

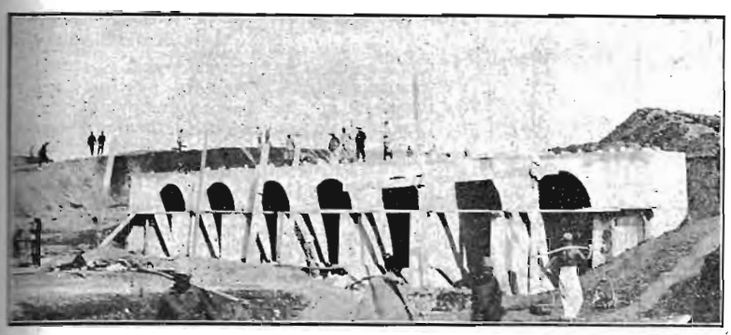


PEKING-TATUNG-FU RAILWAY.—A glimpse of the country along the Tang River



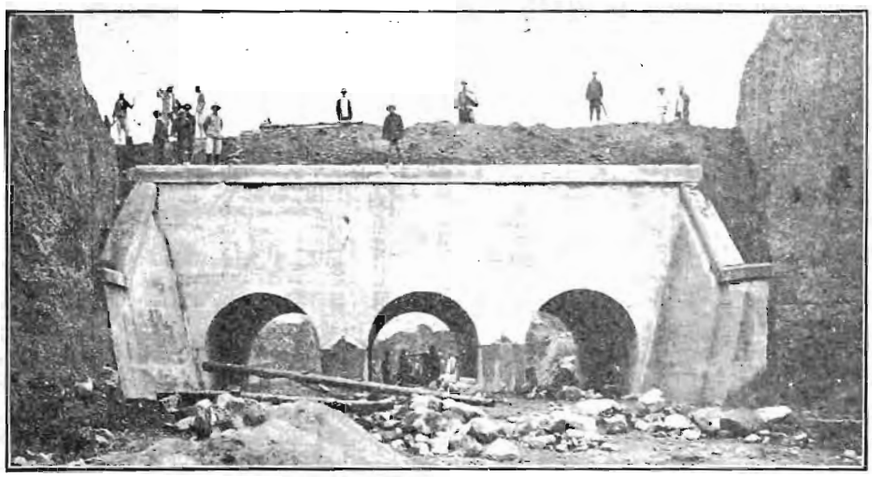
PEKING-TATUNG-FU RAILWAY.—Embankment across a loess chasm at Shao Chia-tsao

PEKING-TATUNG-FU RAILWAY.—Embankment construction on the rolling country near Tatung-fu

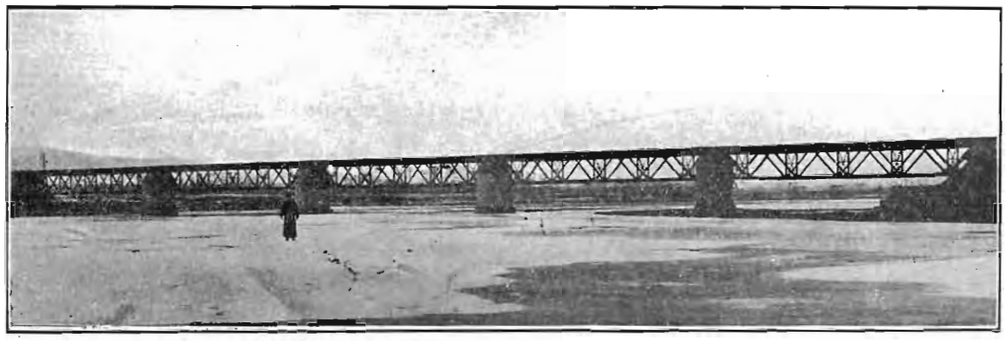


PEKING-TATUNG-FU RAILWAY.—Seven arch concrete culvert at Chu Chia-shao to carry an embankment 55 feet high. The arches are 12 ft. high by 10 ft. wide by 152 ft. long

PEKING-TATUNG-FU RAILWAY.—Excavating a cutting near Tatung-fu



PEKING-TATUNG-FU RAILWAY.—Concrete culvert at Sha Chia-tsao. The arches are 10 ft. high, 10 ft. wide and 38 ft. in length. An embankment 13 ft. high carries the rails across the loess chasm



PEKING-TATUNG-FU RAILWAY.—The bridge over the Sin Yang-ho

a few hundred yards away within its decaying walls. It is the centre of a large cereal raising, coal-bearing region, and is the distributing city for a large trade to Mongolia, via Kweihwacheng and Suiyuan. The station will be established on high land at present under cultivation, but until the bridge is completed the traffic will be handled from the opposite bank of the river. It is fordable at all times of the year except in the flood season, when it rises from a foot up to twenty-five feet and more. The great height of the bridge is not necessitated by the probable flood level, but by the high country through which the line approaches the river.

The line has been surveyed as far as Suiyuan, and the surveyers report that its construction will entail very heavy work in cuttings and tunnelling. So far the Government has decided not to proceed, and unless financial affairs rapidly brighten Tatung-fu will be the terminus for a considerable period.

Even as it is the railway will cause Tatung to increase rapidly in importance. Lignite coal now sells in the city for as low as one dollar per ton, and a branch line to the mines in the hills close to the city should deliver the fuel to the railway at a very low rate.

Tatung-fu will also profit by the fact that it will be the junction with the line projected to connect with Taiyuan-fu.

Mr. K. Y. Kwong, the engineer-in-chief, has a loyal and capable engineering staff. Mr. Chan Si-lin is the assistant engineer-in-chief, while Mr. Cha Chao-lin is in charge of the construction on the second division from Tiencheng to Tatung. He has with him Messrs. Liu Chi, Wei Hsen-wu, and Shao Pao-cheng. Mr. J. F. Yu is in charge of the first division, now open for traffic.

Mr. K. Y. Kwong (Kwong King Yang) is an American educated student, who has proved that the Chinese are able to apply Western learning efficaciously and economically. He is keen on his work and takes a remarkable personal interest in all details. He went to America in 1874 with the first group of Chinese students, and after a period of private tuition entered the East Hampton (Mass.) Grammar School. Two years later he graduated from Williston Seminary, and entered the Massachusetts Institute of Technology, where he was compelled to discontinue his studies by the recall of the Commission with which he was connected in his studies. Upon returning to China, however, he decided to continue in touch with engineering and entered the employ of the Kaiping Coal Mining Company, resigning three years later to join in the construction of the Peking-Mukden railway. He rose to resident engineer, and when the Peking-Kalgan line was commenced he was made District Engineer of the construction of the Nankou Pass section, the most difficult piece of work in North China. Subsequently he was given control of the Canton end of the Canton-Hankow railway, and by 1911 had placed seventy miles of line in operation. He then returned to the Kalgan line as engineer-in-chief, and it has been the adoption of his advice that has brought that system from a losing to a paying one. At the time of the Revolution he was requested to take up the Director-Generalship of the Changsui Extension as well as the duties of Engineer-in-Chief, but that he declined, and proposed that Mr. M. C. Kuan, the Director-General of the Peking-Kalgan line, should act in both capacities.

(*Continued on page 88*)

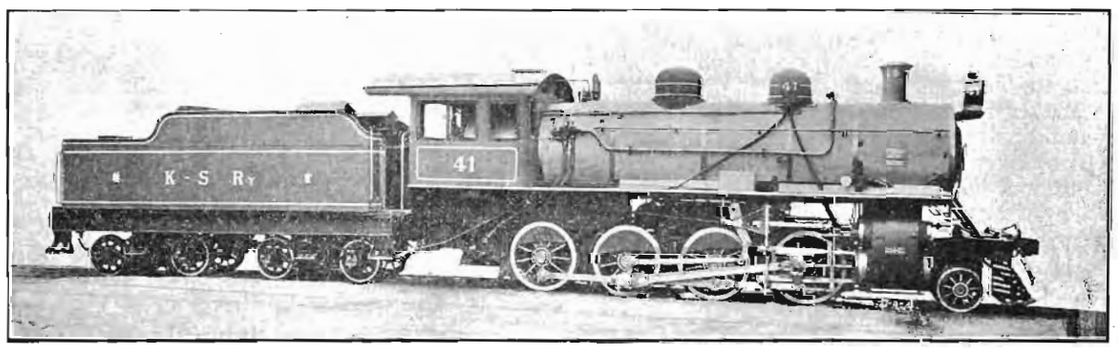
Mr. Liu Chi,
Resident Maintenance Engineer, Changsui Extension

AMERICAN ELECTRICAL SUPPLIES IN JAPAN

The sale of American electrical machinery and supplies in Japan during 1912 was the largest in the history of this line of business in the Empire, reports Consul-General Sammons. The total sales of electrical supplies for the year aggregated over $5,000,000, the bulk of the imported products coming from America. The importation of all kinds of machinery into Japan increased about $1,500,000 during 1912, the total, in round numbers, being $14,150,000.

There are in Japan several British manufacturers who have a fairly large electrical business, but the Allgemeine Co. and the Siemens-Schuckert Co. are the two large German competitors of the American manufacturers of heavy electrical machinery and supplies.

The principal business during 1912 consisted of the extension of existing light, power, and railway stations. The Tokyo Municipal Railway, for instance, purchased $300,000 worth of apparatus for transforming high-tension current in their various sub-stations throughout the city to the trolley voltage.



STANDARD PEKING-KALGAN FREIGHT LOCOMOTIVE.
Designed and constructed by the American Locomotive Company

Electric Water-Power Plant

The machinery ordered about a year ago to Tokyo for various large water power-electric companies has been arriving during the past few months and the plants are being completed. The principal ones are as follow:

Tokyo Electric Light Co.—An extension of about 40,000 kilowatts to their first water-power electric plant which amounted, when it was installed, to approximately 20,000 kilowatts. This extension is now about finished.

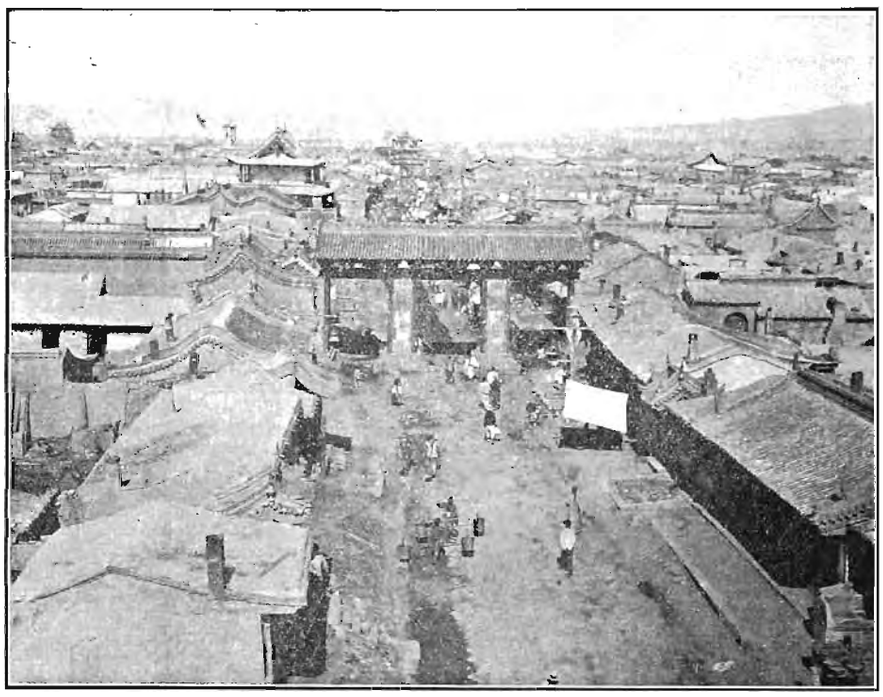
The Kinugawa Hydro-electric Co.—Approximately 40,000 kilowatts. This plant is now about completed and some current is already being generated to Tokyo from its power stations.

Katsuragawa Hydroelectric Power Co.—This equipment complete was supplied from Schenectady, N. Y., the aggregate capacity being about 40,000 kilowatts. All of the machinery has arrived and the work will probably be finished within the next few months, so that a large amount of power from that source will shortly be brought down to Tokyo.

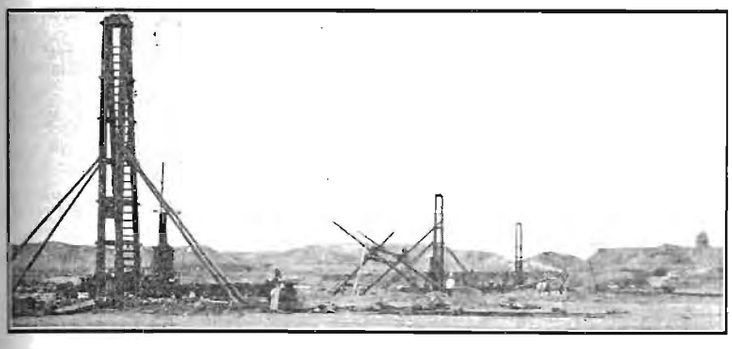
The Inawashiro Hydroelectric Power Co.—The order for this apparatus, amounting to about 40,000 kilowatts, was placed about one-half with an English firm (the Dick Ker Co.) and the other half in America (Westinghouse.) This apparatus has not been shipped yet, and that company will therefore not be ready for operation until after the end of this present year.

At Yokohama a 3,000 kilowatt steam turbine generator was installed further to increase the capacity of the existing lighting plant.

At Osaka there have been many additions to the existing electric railway plants and some small suburban roads have been put into operation in the last four or five months. Osaka is a very active centre for the electrical business in Japan, and many suburban roads have been successfully put into operation there. On account of the large manufacturing interest developed, electric power will be largely used there in the future, and as there is a large water-power company, the Ujigawa, which is now nearing completion, and which will bring into Osaka 30,000 to 40,000 kilowatts of current, the prospects are favorable for low cost light and power in that city in the future.



Peking-Tatung-fu Railway.—A view in Tatung-fu from the top of the wall

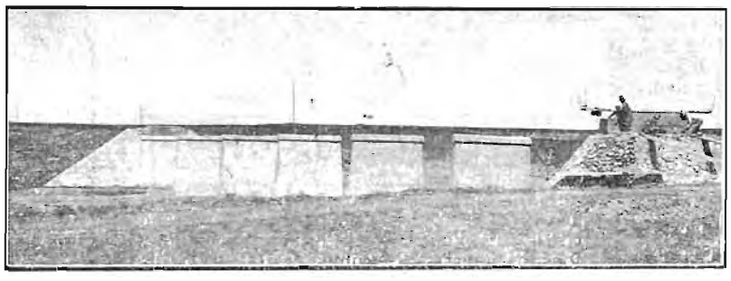


Peking-Tatung-fu Railway.—Pile drivers in the bed of the Yu river at Tatung-fu

Peking-Tatung-fu Railway.—Concrete culvert at the Hsi Tsoi-tze to carry embankment 63 feet high. The arches are 10 ft., by 10 ft. by 175 ft.

Other Buyers of Electrical Machinery

The Kyushiu Electric Railway added during 1912 a 3,000 kilowatt turbo generator set, and at Nagasaki two 500 kilowatt turbo generator sets were installed as an extension to the existing lighting plant. The coal mines in Kyushiu have also been active in purchasing electrical apparatus.



Peking Tatung-fu Railwy.—Bridge at Shang Yu-chien. Steel girders; six spans of 30 ft. each, height of piers 17 ft.

The major part of the sales reported have been made through the General Electric Co. of America. In addition to the extensive business of selling American electrical machinery, the General Electric Co. is a leading factor in the electric lamp supply trade in Japan. It has developed a very large lamp manufacturing plant at Tokyo, which now supplies the great bulk of the incandescent lamps used in the Empire. This plant is operated through a Japanese company under American control. It is managed entirely by Japanese, however, and the operatives are largely Japanese girls. It has been very successful both financially and in supplying the demands of the country. In fact this is a new industry created in Japan within the last three or four years.

The General Electric Co. also owns a considerable interest in the Shibaura Engineering Works at Tokyo, which is controlled by the financially powerful Mitsui Co. The Shibaura works manufacture electrical apparatus up to 2,000 kilowatts, and the business for the past six months was so satisfactory that the company has decided to increase its capital from the present $1,000,000 to $2,000,000 to take care of the demands of the market here. There is close co-öperation between this company and the parent General Electric Co. of Schenectady, N. Y., and there is apparently no reason why this Japanese electrical manufacturing concern should not become very strong and prosperous here. All of its products are manufactured in accordance with the American designs of the General Electric Co.

Large quantities of the smaller electrical supplies are imported into Japan, and in this business American manufacturers and importers participate very satisfactorily. It is evident, however, that the Japanese will be able, particularly through foreign associates, to manufacture the greater part of the smaller electrical supplies, including telephones and telephone equipment. The manufacture of this class of smaller electrical products in Japan is growing steadilyy and rapidly.

According to a contemporary a wooden tire has been invented for motor vehicles. It is formed of sections of ash bolted on to the rim in two, three or four rows, according to the weight of the vehicle. Each block is provided with a steel cleat to prevent it from being split by stones on the road. If one block is damaged a new one can be easily substituted. It is claimed that these wooden tires possess an astonishing degree of elasticity. Experiments carried out with them on both light and heavy vehicles are stated to have been highly satisfactory.

MINING ADMINISTRATION IN CHINA

The *Mining Journal* writes:—

The future development of a great mining industry in China is a theme upon which many engineers who have visited the country have been wont to discant, and with its enormous population and great deposits of coal there seems every reason to expect in due course the growth of a very large home market, and possibly, if capital does not become permanently scarcer, the creation of important industries doing a large export trade. Whether the mineral riches of the country are as great as in their present little known condition they are generally assumed to be or no, there can be no doubt that the anxiety displayed by European capitalists to acquire mining concession has awakened Chinese interest in the country's latent wealth, and is no doubt largely responsible for the hostility with which native opinion of late has come to regard the alienation of mineral concession to foreign concerns. The day, however, has gone by to oppose mere negation to the advancing capitalist, and as the necessity for foreign finance becomes increasingly realised a knowledge of what the country has to offer in the way of unascertained assets is more generally felt. Some tentative efforts have been made to meet the general native ignorance of mining in a modern sense from which China suffers by the formation of the Tongshan school with which the Chinese Engineering and Mining Company was associated, and by the creation of a geological department in the Peking University; but no systematic attempt, so far as we are aware, has been hitherto attempted to create a mining department to study the resources of the country, create a technical administration, and train a body of professional engineers. According to particulars contained in a pamphlet recently issued by the Minister of Industry and Commerce, and to observations explanatory of the circular contained in a recent issue of the *Far Eastern Review*, a more or less complete scheme has been evolved, which is of much interest not only as regards the prospects for China herself, but also as a practical commentary on the various feature of mining administration in different parts of the world, since in a case of this kind there can be no doubt that imitation is the sincerest flattery. It is proposed to create three distinct entities, called the Mining Academy, the Prospecting Corps, and the National Mining Association; while, owing to the fact that China is in the fortunate position of being able to create the foundations of a naticnal mining service unhampered by any pre-existing organisation, these various departments would have an integral connection. The Mining Academy, to treat of these departments in their logical order, will take students who have passed the middle school course and give them a three years' course consisting partly of class and partly of field work. A start is to be made with thirty students, who will select either a mining or geological course. The staff of the Academy is to consist of a president and four professors, two of whom must be foreign. These professors will spend half the year in prospecting work and half in teaching. Graduates from the Academy will receive the title of M.E., and will then be eligible for the second branch of the national organisation—the Prospecting Corps—after three years' work, in which they may be appointed Technical Experts. It will be seen that the object of the scheme is to create in as short a time as possible a large body of trained men who can undertake a geological survey of the vast territories contained in the Chinese Empire. It is proposed to divide the country into three categories: Districts which are rich and easy of exploitation, districts where communications are easy, and districts where communications are poor and mineral prospects unattractive. At the present time it is estimated in the broadest outline that one-tenth of the country answers to the requirements of the first class, three-tenths to those of the second and six-tenths to those of the third. Allowing a period of fifteen years, it is hoped that it may be possible to collect reports and specimens and map the country in greater or less detail on the principles outlined, and thus afford a basis upon which the Government and people of China may be able to embark on mining on an intelligent basis. In addition to the Academy and Prospecting Corps, the third body to be formed, the National Mining Association, is no less important. Its members will be drawn from the proprietors of mining companies and others engaged in mining work, students who obtain their mining degree, and capitalists who are connected with the mineral industry. This Association will act as the adviser to the Government in mining matters, maintain a laboratory, make a comparative study of mining generally, create a publicity department embracing monographs, practical text-books and a periodical mining magazine, and finally establish a sort of appointments' board and a bureau for investigating claims preferred for State assistance by province or districts. Owing to conditions in China, and in consequence, perhaps, of a study of the trend of modern developments in the more advanced mining countries, it is assumed from the first that private capital will be inadequate to deal with the capital requirements of the mining industry, and that much will have to be derived from the Government, which in its turn will have to have recourse to foreign loans. Consequently, the responsibility thrown upon the department responsible for approving or rejecting any claims will be a considerable one, and the necessity of reliable technical advice indispensable. That the teachings of mining history do not go altogether unread in China is somewhat amusingly illustrated by a reference to Australia. Australians, as we are told, are fond of saying that the gold output of their continent in the past fifty years would have sufficed to build a triumphant arch of the precious metal, but the capital required to produce this would furnish two such arches, and the lesson is drawn that if the exploitation of the investor has been so great in a rich country where people are to some extent familiar with the industry, the dangers of exploiting the public in a country like China are greater still.

Among the new departures initiated by the recently organized Republic of China, one of the most commendable is the proposed organization of a bureau for systematic study of the mineral resources of the country, says the *Mining and Scientific Press*, and continues:—One of the most critical problems of the new republic is that of national finance, which is closely bound up with national prosperity, which in turn rests upon the development of natural resources, agricultural and mineral. Much has already been done in unsystematic fashion, and the general features of the geography, geology, and mineral resources of China are fairly well known through the studies of a succession of explorers and students, beginning with Marco Polo and extending down to the present. The most important work was done by Baron F. von Richthofen and the geologists attached to the 'Mission' of the Lyons Chamber of Commerce. The United States bore honorable part in this pioneer work through the explorations of Messrs. R. Pumpelly, Bailey Willis, and others. The need for systematic and continuous study as an aid to right development is obvious, and the new government is to be commended for the promptitude with which it has taken up this matter.

The method of organizing as so far announced, seems less commendable. It is proposed to found, under the Ministry of Industry and Commerce, a Mining Academy to be situated in Peking and to consist of a president and four professors, two of whom are to be foreigners and two Chinese, and it is interesting to note that, following the plan suggested by Mr. T. A. Rickard some years ago, the professors are alternately to teach one-half of the time and to spend the other half in the field. The graduates of the Academy are to be organized into a Prospecting Corps which will study the mineral deposits of the various provinces and map them in order to determine which are most worthy of immediate development. It is apparently taken for granted that government aid will be asked in the development of mineral deposits, and one of the functions of the new bureau will be to pass upon the validity of such requests as well as to prevent the organization of swindles. The conjunction of teaching and geological surveying presents various disadvantages, and is evidently proposed in order to build up a corps which has been trained under the supervision of the heads of the organization. Little is to be gained by such a method, and much is sacrificed. The number of Chinese young men who have already been trained in geological and mining work, chiefly in foreign countries, is ample to furnish the personnel of such an organization, and the training of raw recruits only leads to unnecessary delay in bringing the institution to a stage where it can do effective work. In addition, all previous experience goes to show that educational institutions in Peking are unpleasantly accessible to official interference, to the great detriment of their work. The director of the new bureau is to be Mr. Esous Chang, and the mining professor Mr. C. Y. Liu, a graduate in 1911 of the School of Mines of Columbia University. Both of these gentlemen are guilty of "the crime of being young" and are accordingly lacking in the previous experience which the organization of a survey of a country larger than the United States would seem to demand. On the other hand, it must be remembered that Clarence King was also a very young man when he led the way in similar work in this country, and we hope Messrs. Chang and Liu may meet with a corresponding degree of success. A further proposal, which is excellent, is the organization of a National Mining Association, which is to combine the functions of the Institute of Mining Engineers and the Mining and Metallurgical Society in this country, and is to co-operate with the Academy and Prospecting Corps. Any work which these organizations are able to do will be for the advantage of the newest of republics, and we wish them Godspeed.

PEKING-KALGAN-TATUNG-FU RAILWAY

List of Important Bridges on Changsui Extension

(*Continued from page 86*)

Tung Chiao Ho bridge, at Kalgan, 5 deck spans of 100 ft.

Ta Yang Ho bridge just East of Tsai Kou Pu Station, 16 deck spans of 100 ft.

Siu Yang Ho bridge, also East of Tsai Kou Pu Station, 7 deck spans of 100 ft.

At Chung Kao Chuang

7-10 ft. arch culvert and embankment filling over top of arch is 62 ft.

At Hsichuitze

Double 10 ft. arch culvert embankment filling over top of arch is 63 ft. high.

At Tatungfu, Yu Ho

17-deck spans of 100 ft. height of pier from river bed is 54 ft.

ANOTHER BELGIAN RAILWAY

FROM SOUTH TO NORTH OF SHANSI PROVINCE

The Chinese Government has signed an agreement with the Belgian concern known as "Compagnie Générale de Chemin de Fer et de Tramways en Chine" for the construction of a railway longitudinally through the province of Shansi.

Such a railway will connect the midland trunk line (the Lung-Tsing-U-Hai), now being built with loan funds supplied by the same Company, with the Peking-Kalgan extension at Tatung-fu.

The junction of this newly projected line with the Lung-Tsing-U-Hai railway will be at Tung-kwan, in the extreme south-west of Shansi. The route will thence run north by east to Taiyuan-fu (the Capital of Shansi province and the present terminus of the railway from Cheng Ting-fu, on the Peking-Hankow trunk line). From Taiyuan-fu it will continue in a northerly direction to Tatung-fu, which, in a few months, will be the railhead of the Chang-sui Exteusion of the Peking-Kalgan line described elsewhere in this issue.

An important aspect of this agreement is that the Company have the option to extend the railway in the south from Tung-kwan to Chengtu, the capital of Szechuan.

With the extension the line will be some 960 miles in length.

No railway in China are likely to have such an important bearing upon the political future of the country as these two routes which have now come under the dominance of the Belgian financial organisation named in the first paragraph of this article.

Apart from its political bearing, however, the projected railway will place in the hands of the Belgian syndicate the greatest amount of mileage held by any individual nation in China, and the two routes will embrace an area of country of tremendous importance to Russia, whose financiers are alleged to be interested in the Compagnie Générale de Chemins de Fer et de Tramways en China.

Considered from a purely economic standpoint the proposed line is likely to have a tremendous influence upon the development of one of the richest mineral bearing provinces of China. It is set down as a fact that Shansi possesses coal fields more extensive and richer than any other like area of the world, while iron exists in great abundance. From an agricultural point of view the products are confined to a great extent within the valleys of Taiyuan-fu and Kiang-chow, and consist mainly of corn, tobacco, cotton and sometimes rice. The climate is too severe to obtain two harvests per year, so Shansi is compelled to procure from the neighboring plains the products it lacks itself.

The engineers are liable to find the railway one difficult to build—or at least expensive. Shansi is mountainous throughout, a plateau ascending in gradual terraces and intersected by mountain ranges towards the North. It has long monotonous ridges of yellow land and several alluvial plains very rich and fertile. The chief mountain ridge inclines gradually from north to south, forming a plateau which varies in elevation from 2,600 to 5,000 feet, being flanked on the east, north-east, and north by peaks which rise to a still higher altitude. Its steep slopes have been deeply furrowed and eroded, and disclose to the eye at the present day the calcareous and coaly deposits which constitute its base. On the north long chains traverse it from south-west to north-east, and continue the massive crest of the southern Ordos table-land. These attain an elevation of 3,600 feet. Running along the left bank of the Fen-ho in the south is the Ho-shan range, which rises to a height of 7,860 feet.

In the centre of the province there exists a series of depressions inclining in the direction of north to south and separated from each other. These are the dried up beds of former lakes, which have disappeared, leaving behind a thick alluvial sediment more fertile than the surrounding loess or yellow land. There are seven of these "lakes," and upon their principal sites stand the cities of Tatung-fu (3,900 feet high), Taiyuan-fu (2,600 feet high), and Ping Yang-fu (1,800 feet high). The southernmost, that of Hsiai Chow, attains an elevation of only 1,200 feet.

For a considerable distance on its progress northward the proposed railway will undoubtedly follow the valley of the Fen river. This is the largest stream in Shansi. It rises north of Taiyuan-fu and enters the Yellow River in the south of the province after watering the most fertile part of Shansi. It crosses the two richest plains of Shansi, those of Taiyuan-fu and of Ping Yang-fu. Its waters frequently rise suddenly and devastate the adjoining region.

From Taiyuan-fu to Kiang-chow a very frequented road, traversing numerous important cities, runs along its banks. It is navigable for no great distance, boats being able to go no further into the province than Kiang-chow.

The chief cities likely to be tapped by the railway, are, in the order of their location proceeding northwards from Tung-kwan, Kiang-chow, Ping Yang-fu, Fenchow, Taiyuan-fu, Ning Wu-fu, Tatung-fu and Kwei Hwa-cheng.

Kiang-chow is within the bend of the Fen-ho, and is prettily situated. It is the terminus of navigation and the principal market place of south Shansi. It lies in a plain of considerable fertility and is in the neighborhood of coal mines.

Ping Yang-fu is one of the oldest cities of China, but of its ancient splendor the only remnant to-day is a magnificent city wall. It is situated in a vast alluvial plain where the system of irrigation is unrivalled. Tradition states that the Emperor Yao once resided there.

Fenchow-fu is an important town near a rich valley abounding in coal.

Taiyuan-fu is, of course, the capital of the province, and by virtue of this fact and its railway connection, is the most important city in the province. It is situated on an elevation of 2,600 feet on the north of a vast plain studded with populous villages and neatly constructed houses. Nearly all the valleys which open on to the plains have mines, carts drawn by oxen, wheelbarrows, and pack animals bringing the coal to the capital. Formerly this city manufactured defensive weapons on an extensive scale. Its commerce is very brisk. It is surrounded by beautiful gardens and orchards. In several places throughout the plain coal, iron, and sulphur are found. The city is electrically lighted, and its roadways are macadamised and well kept.

Tatung-fu has already been referred to in the article dealing with the Chang-sui Extension. It is destined to be an important trading centre, and the deposits of coal and sodium carbonate in the vicinity are sure to become of great value.

Kwei Hwa-cheng, or the Blue City, comprises two towns, the one religious and military, with its schools and its Lama monastery (the Grand Lama of Urga at one time resided here); the other largely commercial. The latter is an important market for skins and camel-hair ropes, etc., imported from Mongolia. The environs are covered with fruit trees.

The exports of Shansi are principally coal, iron, salt and products from Mongolia, while the imports consist of corn, silk, woollen goods, tea and salted provisions.

In both industry and commerce Shansi holds a prominent place, many cities and villages devoting themselves to industry. It is this fact combined with the undoubted richness of the province which tend to make the proposed railway one of considerable value as an earning factor.

GROWTH OF BELGIAN INTERESTS IN CHINA

As is announced in another part of this issue China has signed an agreement for a loan with Belgian financiers to construct and equip a railway through Shansi province, with an extension southwards to Chengtu—the capital of Szechuan province.

The signature of this agreement brings forcibly to notice the most important development in international enterprise which has taken place in China in recent times. Belgian interests have sprung up in a night, as it were, with the rapidity of the famous beanstalk of fable. From a comparatively insignificent seed they have sprouted into luxurious vegetation which casts compassionate shadows upon the meagre crop produced by other less wide-awake foreign financial farmers who have been tilling the not too productive soil of China for many decades.

Whether this forced growth of an exotic is good for China is another question. The fact that has to be faced is that it is here, and thriving amazingly. Results count. The Belgians who have been working quietly and unostentatiously to produce the wherewithal for the beanfeast are to be congratulated; nor need too close an inquiry be instituted in regard to the method of fertilisation adopted to produce so fruitful a crop, whilst laborers in other directions have evoked nothing much more exhilarating to the feelings than an ænemic looking sprout which has nothing to recommend it to consideration but the questionable verdancy of "promise."

The feeble little plant of the Quintuple Group, for instance, has been watered mainly with the saliferous lachrymation of disappointed hopes. The Group floated a Reorganisation Loan of £25,000,000—an unproductive piece of business—to aid China through her troubles, and China shows her gratitude for the assistance in that time of pressing need by granting financiers outside the sacred pale of the Quintuple consortium substantial railway loan agreements which make past performances of the kind look insignificant in comparison.

In the short time which has elapsed since the Revolution Belgian interests have been particularly favored. They have been granted the now notorious loan contracted for the Government by Mr. Tang Shao-yi, for £1,000,000; the loan for the construction of the Lung-Tsing-U-Hai railway for £10,000,000, and the loan just signed for the construction of the railway through Shansi province. The chief item of importance in the last two transactions is the fact that the Belgians have the monopoly to supply the whole equipment for some two thousand miles of railway.

The Governments behind the Quintuple Group have religiously prevented their nationals from participating in business which has undoubtedly been available, in order to keep China in the narrow path of financial rectitude, and that fact combined with the reluctance of the Chinese to be fettered too much at this period with exacting schemes for auditing, has made it possible for the Belgian operators to effect one of the largest coups that have been brought off by one combination in many years. A consideration which may have induced the Chinese Government to make these railway deals is a sense of gratitude to the Belgians for coming forward in March, 1912, with a welcome million sterling which aided them materially in defraying expenditure in certain directions which the then Sextuple Group would not have tolerated. A further inducement undoubtedly was the possibility of securing further sorely needed ready money in the shape of "advances" which could be used without the aggravating interference of auditors.

The representatives of the Compagnie Générale de Chemins de fer et de Tramways en Chine have been up and doing whilst the Quintuple Group and the representatives of the Governments supporting them have been resting in placid contentment on the salubrious Western Hills, near Peking, or have been gaily abandoning themselves to the buffeting of the breakers at Pehtaiho, satisfied that they, and they alone could, when they felt so inclined, control such ventures as those which have now slipped past them into the hands of a syndicate hitherto held by them in something akin to contempt. If the Quintuple Group believed that they had the Chinese bound down to a certain procedure with regard to industrial enterprises it would appear, then, that the Chinese have once again exhibited their faculty for being able to drive horses and carts—or, in this case, railway lines—through any undertakings or understandings which they might make. The signing of the agreement for the Lung-Tsing-U-Hai railway was a severe shock to the bankers, but the latest evidence of their failure to control the Chinese Government in the manner in which they believed they would be able to do has come upon them like a bolt from the blue. It is unnecessary to remark that both these agreements were negotiated and signed up in absolute secrecy.

It is quite probable that the Quintuple Governments—or rather one or two of them who need not be specialised—will begin seriously to wonder if after all it was profitable for them so loyally to prevent their nationals doing business of the character now prompting this reference in order to permit such to be controlled by the banking firms represented in the Group. America, of course, withdrew from the Group, and her nationals had a fair field if they had felt disposed to avail themselver of it, but American financiers have no wish to enter into business with China at this juncture, and therefore suffer nothing but the results of inaction of their own volition. But the British independent firms have found themselves seriously handicapped. They have been restrained from activities which might have been productive of excellent results, and even those who have entered into negotiations with China are threatened with lack of diplomatic support in any undertakings into which they may have ventured. It is only natural that independent firms view with anything but gratification the success of the Belgians, but the Belgians are not to be blamed for successfully hauling plums out of the pie in the pantry whilst others have been sucking their thumbs on the lawn. The Belgians are here for business, and they are entitled to what they can secure if the Chinese Government exhibits a disposition to deal lavishly with them.

How such contracts as those entered into with the Belgians will affect China politically in the future is another matter. Much depends upon the amount of Russian money and diplomatic influence involved in the Compagnie Générale de Chemins de fer et de Tramways en Chine—or, to put it in another way, how far the Campagnie is involved in Russian diplomacy. Current report has it that the concern employs its energies in the interest of Russia, but current report is sometimes grievously in error. The allegation, too, is as stoutly denied by the Belgian partisans, while added refutation is supplied by the Russian Minister in Peking, who unequivocally asseverates that Russia has nothing whatever to do with the concern or its affairs.

That may or may not be true. The significant point is that the latest performances of this Company bring into effect the identical scheme which the Russians long ago cherished to obtain railway domination in certain spheres in China. Such a suggestive thing may be merely the long limb of coincidence, but it is worthy of attention.

Reference to old maps, or in fact the map published as late as 1911 under the title of "Stanford's Map of the Empires of China and Japan," will show what that scheme was. Red lines there indicate the Russian project to connect Russia through the centre of China with a warm seaport in the region of the mouth of the old Yellow River or the

Yangtsze River, as well as another line branching northwards from the vicinity of Tungkwan, in south-western Shansi, through Taiyuan-fu, Tatung-fu and Kwei Hwa-cheng, and on to Urga.

The two lines secured by the Belgian Company most peculiarly follow in detail these routes, so far as they concern China proper. From the west Russia designed to enter China by way of the Province of Sinkiang—or what used to be known as Chinese Turkestan—continuing the trans-Caspian system of Russia from its terminal at a place called Andijan, about one hundred miles from the Sinkiang frontier. From there it was planned to build a line south-eastwards to the frontier, and then due eastward to Kashgar, whence it would strike north-eastwards, along the old trading route, through Utch, Aksu, Mai, Sairam, Karashar and Hami. It would then turn south-eastwards across the boundary of Kansu Province, through Suchow (to which place the Belgians now have the option to extend the midland trunk system), to Lanchow-fu, on to Sian-fu, to Honan, Kaifeng, and to the sea. As far as Suchow, in Kansu, from the sea this line is now in the control of the Belgian syndicate.

The other Russian project, which linked up with this proposition, was the line already mentioned from Tungkwan longitudinally through Shansi, to the Mongolian frontier, and thence on to Urga. This is the route which has now been obtained by the Belgians as far as Tatung-fu.

Russia, in the latter years of the Manchu régime, used every possible influence to secure the rights for these lines, but the Manchus—corrupt, short-sighted and disregardful of the welfare of China as they might have been, and as they were alleged to have been—never once lost sight of the dangers that lurked in such a proposition, and they successfully resisted every move made and every blandishment offered to seduce them to forget what they believed to be the best interests of their country. They declined to employ European money in this direction at any cost.

So scrupulous were they, indeed, to avoid complications which might give the claws of the Bear even an indirect hold upon the carcase of their country that they would never, under any circumstances, hypothecate the Peking-Kalgan lines as security for any loan floated by European financiers. Not even the terrible temptation caused by the dire lack of funds which threatened their tottering throne during the Revolution caused them to weaken in this resolve. They could have had money on the security of the Peking-Kalgan Railway which might well have turned the scale in their favor, but they forewent it—and they fell. Yet what did we see? We saw the Premier of this Young Republic, —which, it was claimed, would tread under foot the corruption and the neglect of country which characterized the Manchus,—pledge that line as security for a million sterling from the Belgians almost within one month of the abdication of the alleged "rapacious enemies of China."

Thus the Republicans broke down without a moment's hesitation what was a tradition with the Manchus. Nor was that enough. Within one and a half years of the abdication of the Manchus, the Government has given to European financiers who are alieged, rightly or wrongly, to be influenced by Russian interests, the very railways which Russia strove vainly to obtain from the Manchus. A statement also gained considerable currency in Peking to the effect that the Government had ceded the right of constructing the Tatung-Kwei Hwa-cheng section of the Changsui Extension of the Kalgan line to the Belgians, but that is denied both by the Belgian representatives and the representatives of the Chinese Government. It is difficult to believe that the Government would be so short-sighted as to hand over to continental financiers this vital section of a line which must be portion of any railway destined to connect Urga with Peking, and we are at present prepared to accept their denial of the story, *malgré* the vociferations of its circulators as to its accuracy. It is to be hoped in the best interests of China that the Kalgan-Kwei Hwa-cheng railway will always be retained in the control of the Government. It would be folly, to use the mildest phrase, for them to permit any European financiers to build it.

That fears are expressed by well-wishers of China that Russian capital and diplomacy are connected with the Compagnie Générale de Chemins de Fer et de Tramways en China is not suprising in view of the early association of Belgian and Russian interests in China. When the Belgians first came into the field as factors to be reckoned with—that was in 1897 when they secured a contract for a loan of 112,500,000 francs for the construction of the Peking-Hankow railway (760 miles)—they were then described as "a Franco-Belgian combination with Russian proclivities." The financial arrangements during the currency of that loan were by clause eighteen of the contract, placed in charge of the Russo-Asiatic Bank, and the negotiations were strongly supported by the Russian, as well as the French, Government.

Russian interests were not so prominent in the next venture—the contract for the Kaifeng-Honan railway (140 miles) which was signed in November of 1903 The syndicate was then composed of:

La Compagnie Générale de Railways a voie etroite; la Société Générale de Chemins de Fer Economiques; la Compagnie Belge des Chemins de Fer Reunis; la Société Russo-Francaise de Chemins de de Fer et de Tramways; les Banques Empain de Bauer, Anspach, Dausette et Roy de Blicquy; la Banque Russo-Chinese, la Banque Benard et Jarislowsky, etc.

This organisation was known as the Compagnie Générale de Chemins de Fer et de Tramways en Chine, and by virtue of the clause in their contract giving the option of extending the line from Honan-fu to Sian-fu, the recent contract was given to build the Lung-Tsing-U-Hai railway. It is claimed, however, that the organisation underwent a change which eliminated Russian interests, but that remains to be seen. At all events it is certain that French interests exist, and it is more than likely that they will participate in the loan now being arranged for the Shansi project to a large extent. The one thing that is certain is that the loan will not be purely Belgian, and the interesting point to China is: How far does Russia financially or politically participate?

U. S. RAILWAY BUSINESS FOR MAY

(*Continued from page 91*)

All of these amounts are substantially greater than the similar return for May, 1912. They are from the summary of the earnings and expenses compiled by the Bureau of Railway Economics from the monthly reports of the steam railways of the United States to the Interstate Commerce Commission. They include over 95 per cent. of the mileage and earnings of all of the railways of the country.

ELECTRICAL ENTERPRISE IN KOREA

The total amount of capital invested in electrical concerns in Korea is about £1,225,000, says the *Financier*. Of this sum £980,000 is invested in concerns already working, and the balance in electrical works which are in course of construction.

During the year two new companies, the Gensan Hydro-electric Company and the Taikyu Electric Company, commenced operations. The former supplies the town of Gensan with light and power, and is the only hydro-electric company in the country. The latter supplies light and power to the town of Taikyu.

Eight other companies, which have already received official sanction, are expected to commence work during the present year.

For the moment there would seem to be a general tendency to await the results of the undertakings now in hand before embarking upon new enterprises. Though British electrical machinery is perhaps not so largely represented in Korea as could be wished, nevertheless a considerable portion, especially prime movers and boilers, are of British manufacture. British machinery is popular, as it is known to be of good quality, but reasons of economy lead purchasers to seek cheaper markets elsewhere.

It is reported that, with regard to the opening of Pukow, the Director, Mr. Chian, has submitted an estimate of about $10,000,000, which amount, however, does not include the expense for the purchase of lands. The Ministry of Finance cannot raise such a large amount and proposes that a public loan of $20,000,000 should be raised for the opening of this new treaty port.

TIENTSIN-PUKOW LINE, NORTHERN SECTION

ANNUAL REPORT AND ACCOUNTS

General Report

Mr. Hsiau, the Managing Director of the Tientsin-Pukow Line, Northern Section, has issued his report for 1912. He says:—

I herewith submit the report upon the construction and traffic of the Railway during 1912, with the following remarks:

1. Construction.—The progress of the construction during 1912 is dealt with in the attached report of the Engineer-in-Chief.

The Board of Posts and Communications in Peking decided to adopt the thirty-first day of March, 1913, as the date of the termination in the construction in terms of the Tientsin-Pukow Loan Agreement.

2. Loan Service.—During the year under review, it was found impossible to place, at anything like acceptable terms, the second issue of the Supplementary Tientsin-Pukow Loan of 1910, nominally amounting to £1,410,000. This retardation arose out of the political situation in China as well as in Europe and out of the resulting disinclination of the money market to take up any loans. We were therefore compelled to accept the assistance of the Deutsch-Asiatische Bank, who placed at our disposal various sums on the guarantee of the unissued part of the loan, which sums amounted to a total of £662,000 at the end of 1912. During the period September to and including December, 1912, we were in a position, however, to set aside from our traffic revenue sufficient funds to cover our construction and running expenses in China, the part-payments due to the Maschinenfabrik Augsburg-Nürnberg for bridge work and the purchase of material and stores in Europe.

3. Statement of Accounts.—With regard to the appended statement of accounts, the Auditor of the Syndicate has taken occasion to make the following two observations:

A. Final Head Title I: the amounts paid for landpurchase by the Land Office and the Land Office Tsinanfu have not been verified so far by the Engineeer-in-Chief.

B. Store Account Tsinanfu: the amount placed at the debit of this account does not give the final statement end of December, the final accounts having been retarded by stress of work, a final stock taking has been made middle of April (i.e. 1913).

In explanation of these observations, I have to say the following:

a. Purchase of Land.

The purchase of all the ground required was effected by a special Land Purchase Office. This office acquired all the land strictly in accordance with the plans submitted for this purpose by the European divisional engineers. During construction time, this office was working under continuous high pressure and was, in consequence, unable, as will easily be understood, to complete a final detailed survey of all the ground purchased as well as its demarkation by boundary stones. This work was commenced in conjunction with the European engineers at the end of the year, however, and will produce in due time final records of all the purchases of land signed by the engineer and verified by the Engineer-in-Chief.

b. Store Account Tsinanfu.

Towards the end of the construction period in November-December, 1912, all divisions and sections were instructed to return to the Head Store all the material, etc., still in their possession, such as permanent road material, tools, construction plant, etc. It need scarcely be said that with such a vast undertaking as the construction of the Tientsin-Pukow Railway undoubtedly is, these instructions brought forth a very considerable quantity of material, etc., which on being returned to the Head Store, had to be sorted, stored away and revalued as it had more or less suffered from wear and tear. Owing to this increase of work, the staff was unable to finish the inventory of the whole of the stocks by December 31st, 1912. This has been completed in the meantime, however, and the inventory will be embodied in full detail in the final report on the construction period separately showing new and used stocks.

4. Traffic.—A statement of the monthly traffic returns is appended. Detailed statistical records of the various sources of our traffic revenue were not kept in 1912, as during this period the railway was still in the construction stage.

a. Passengers.

Passenger traffic shows a satisfactory upward tendency in all classes. After the junction of the Northern and Southern Section was effected in the last month of the year 1912 by the completion of the Hwangho Bridge, an increase of traffic was noticed, for part of which the additional express train with sleeping accommodation is responsible, which was now started running twice a week both ways between Tientsin and Pukow (Nanking), covering the distance in twenty-six hours, thus offering the quickest mode of travelling between the north with its approaches from Europe via Siberia and the Eastern part of the Yangtze valley with its approaches to America and Australia via Japan and the Philippines. But also the other trains showed increasing revenue from passenger traffic

On May 1st, 1913, daily through passenger trains over the whole line will be introduced, which we confidently expect to give a further impetus to the satisfactory development of our passenger traffic during the first year of traffic operations unimpeded by construction.

b. Goods.

The increase of traffic under this head is still more pronounced. Especially in the South of Shantung, the demand on the traffic facilities of the railway for the transportation of farming products, coal, etc., during the autumn season was such as fully to engage the whole of our rolling stock.

The interchange with the Shantung Railway in Tsinanfu has developed in a satisfactory manner.

5. Staff. In the latter half of the year 1912, the gradual completion of the work compelled us to dispense with the services of a part of our Chinese and European staff, in the case of the latter on expiry of their respective contracts. We take this opportunity of once more expressing our thanks for their devoted co-öperation to these as well as to the present members of our staff.

Report of the Engineer-in-Chief.

Mr. J. Dorpmüller, Engineer-in-Chief, reported as follows:—

In the course of the year 1912, the following work was carried out:

A. **North of the Hwangho.**—The ballasting of the line was completed. The brick kilns were shut down with the exception of three kilns near Tientsin which were kept working for supplying the requirements partly of the railway and partly of private consumers of bricks, tiles, etc.

Of actual construction work, the protection of all bridges and culverts was perfected in 1912. In consequence of the experience had in August, 1911, on the occasion of the Yunho breaching its banks, the wings of the abutments of bridges and culverts were extended along the embankments, the bottoms of culverts strengthened with concrete re-inforced by wire netting or with a thick floor of masonry laid in cement, their in and outlets safeguarded against the scouring and undermining action of the water by means of far extending additions to the masonry foundations of the bottoms, and these foundations themselves secured by means of especially deep reaching inverted external vaults.

With the exception of the erection of quarters for the police and the extension of the shunting and loading sidings of a number of stations, actual construction work was confined to the vicinity of Tientsin. A goods-yard with shed was added to the Tientsin West Station and an approach road of one kilometer length newly laid out. The erection of the station building at Tientsin West was left over for 1913.

At the Tientsin workshops, the outer wall and quarters for a European foreman and for the workmen were put up and the loco shed enlarged by two stalls.

All construction sections north of the Hwangho were abolished

A start was also made with pulling down the jetties and the temporary stations at Pehhwangho and Chiaoshan on the North bank of the Hwangho which had become disused on the completion of the Hwangho Bridge.

B. The Hwangho Bridge.—During 1912, the three main river spans were erected, the foot paths put in and the track laid on the bridge.

On November 16th, the last rivet was driven and on November 30th, the bridge submitted to the loading tests, immediately after which the first passenger train just arriving from Tientsin was taken across the bridge.

C. The Working in and near Tsinanfu—The earth work for the interchange station between our station and the Tsinanfu West station of the Shantung Railway was completed, the metals laid and a station building put up. For the loco station Tsinanfu, a loco shed with ten bays was erected, a water tower with pumping plant, a coaling platform and quarters for the loco staff, followed in turn by the construction of the overhead bridge at the extremities of the station, guards' and pointsmen's cabins, the goods-shed, the police quarters and of the station building proper of our Tsinanfu main station, which will be completed by about middle of 1913. All sidings of this station as well as its connections with the main workshops, the Shantung Railway and two private sidings were finished.

On the premises of the main workshops at Tahuishu, the year 1912 saw the completion of the building of the main shed and the erection of the plant in all other shops except the machine and the locomotive repair shop. Operations were started in the Blacksmith's shop and in the foundry.

Of the power house, the masonry work was finished and the machine plant was nearly installed. Police quarters had been put up on the premises of the main workshops and a road laid out connecting the same with Tsinanfu.

A siding running down to the port of Lokou was laid on the dyke of the Hwangho.

D. South of Tsinanfu.—As far as the line had been under traffic for some length of time already, i.e. down to about Yenchowfu, further work was confined to protectionary measures and to ballasting, great value being attached chiefly to the safeguarding of bridges and culverts. On account of the insecurity of the country, considerable sums had to be spent on quarters for the police and their officers. South of Yenchowfu the line was at the beginning of 1912 in quite a provisional state; only the track itself was laid right through. At about thirty points, where the bridges were not completed yet, the track was carried across rivers on emergency bridges or through dry river beds by means of deviations. As the latter had to be removed by the beginning of the rainy season, keen

activity set in on this section of the line with the result that all deviations were actually displaced by the middle of June. Simultaneously, the earth work for the extension of some of the more important stations, particularly of Yenchowfu and Lincheng, was taken in hand as well as the ballasting of the line, for which purpose in part coarse sand was available. Eleven station buildings, fifty guards' and pointsmen's cabins, three water stations at Yenchowfu, Chieho and Lincheng with the requisite pumping plant, pipe lines, stand pipes and water towers were erected, besides a loco shed of six stalls each at Yenchowfu and Lincheng with the necessary turn tables, coaling platforms, workshops and workmen's quarters, and further quarters for the traffic and maintenance staff at Yenchowfu and Tenghsien.

With the completion of these works, the buildings on the main line were practically finished.

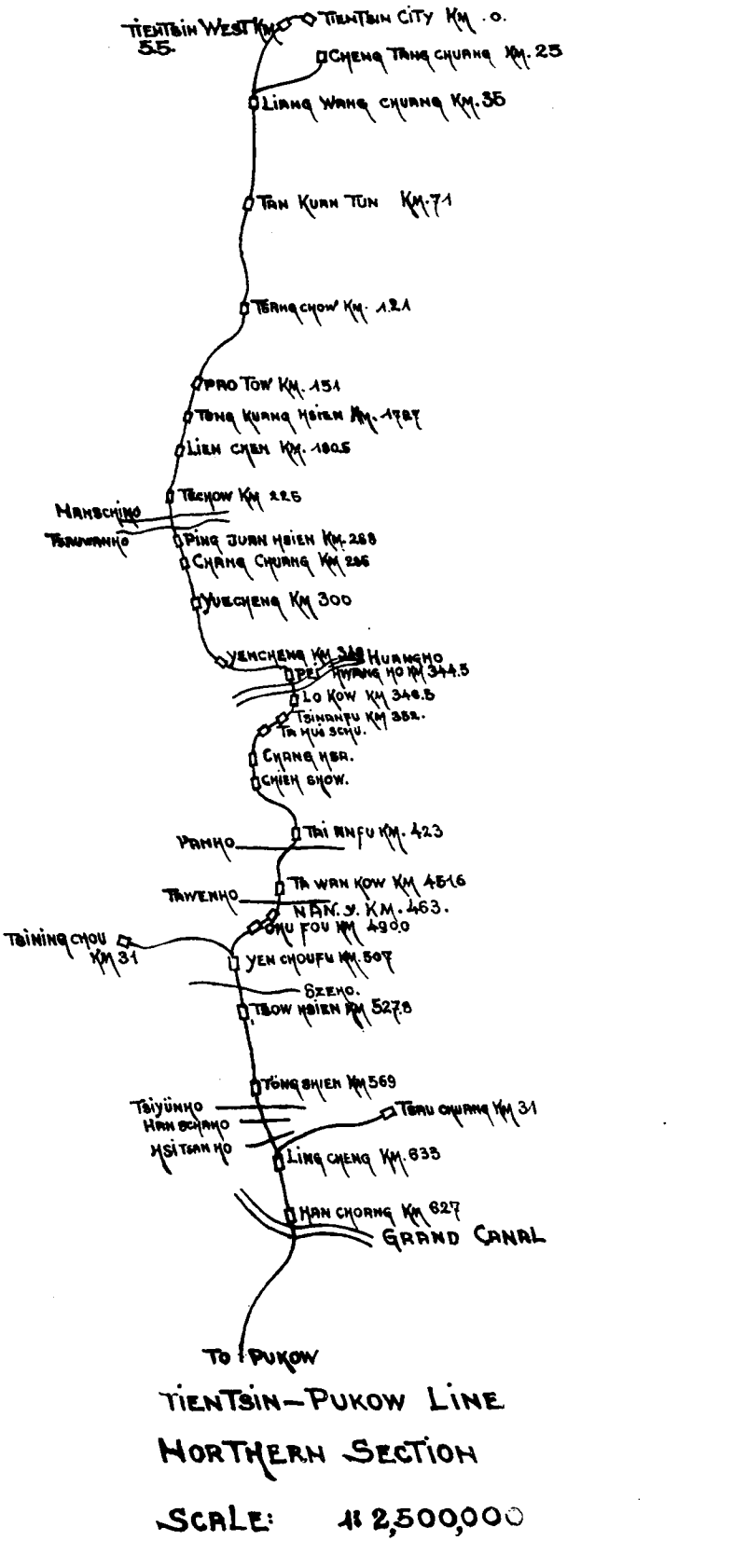
On January 15th, 1912, construction sections VII and VI were joined and on July 1st, 1912, construction sections VIII and IX.

E. **The Branch Lines.**—*1. Lincheng-Tsauchwang.*—The embankment including the bridges having been completed in 1911, the metals were laid in 1912, beginning from Lincheng. Traffic was opened on May 25th. The earth work for the stations at Chow Wu, Tsitsun and Tsauchwang was finished and the sidings laid. As on the main line, protectionary measures for safeguarding the bank and buildings were perfected. The work in connection with this branch line was finished with the completion of eleven guards, cabins, three station buildings with attached police quarters and a small loco establishment with water station. The ballasting of this line was proceeded with.

2. Yenchowfu-Tsiningchow.—In the spring of 1912, the pegging out of the approximately thirty-two kilometers of this line was completed, followed immediately by the purchase of the land and the commencement of the earth work.

Owing to a comparatively dry summer, a speedy supply of construction material was rendered possible over the country roads, a task which would have presented great difficulties under less favourable conditions. We were thus enabled to complete the earth work as well as the bridges and culverts by the end of August and to commence in the beginning of September with the laying of the metals, through traffic over this branch being opened on November 10th. As the banks have not had any rain to stand and are, in consequence, not settled yet, it is to be expected with certainty that they will give us some trouble during the next rainy season. In consideration of the inevitable loss of ballast during the settling process of the banks, the road has been temporarily ballasted with sand. Twelve guards' cabins, three pointsmen's houses and provisional station buildings at Sunszetien and Tsining were erected, and for the shed and the turn table of a small loco establishment in Tsining the foundations were just completed within the year under review.

(*Continued on the next page*)



AN American estimate of crude oil used by the railways of the United States for fuel in 1912 is 32,000,000 barrels. That was an increase of over 4,000,000 barrels 1911. Since 1906 there has been a gradual increase in oil consumption by railways, with the exception of 1908, when it fell about 2,000 barrels compared with the previous year.

ACCORDING to the *Abrasive Age* there is on board the battleship Pennsylvania a neat device for peeling potatoes. It consists of a large sheet iron cylinder provided with a revolving disc as a bottom. The entire inner surface of the peeler is impregated with carborundum grain. By rotating the bottom, the potatoes are whirled about against the sharp carborundum grains, while a stream of water flows down upon them and flushes off the parings. It requires less than a miuute to remove the skins from the potatoes.

Balance-Sheet. December 1912.

Capital Authorised and Raised by Debenture Stock.

Details	Nominal value of bonds £	Rate of issue	Amount of discount £	Actual amount realised £	Actual amount realised Kooping Tls.	Remarks
Under Loan-Agreement 1908 £3,150,000.						
First issue	1,890,000.—	93	132,300.—	1,757,700.—	13,667,058.943	
Second issue	1,260,000.—	94½	69,300.—	1,190,700.—	9,350,282.166	Interest is payable at the rate of 5% per annum on the nominal value of the bonds.
Under Supplementary Loan Agreement 1910.						
First issue	1,890,000.—	93	94,500.—	1,795,500.—	13,157,862.641	
Second issue	(1,410,000.—) (not issued)	—	—	—	—	
	5,040,000.—	—	296,100.—	4,743,900.—	36,175,203.750	

Temporary Loans on Account of Unissued Part of Supplementary Loan.

Details	Amount in £	Amount in Kooping Taels	Remarks
Tientsin-Pukow Railway Southern Section through Hongkong-Shanghai Bank.	250,000.—	1,832,061.075	Interest 4% per annum to be paid to Southern Section.
Deutsch-Asiatische Bank, Berlin	662,272.2.4	4,853,291.858	Interest 7% per annum.
	912,272.2.4	6,685,352.933	

Capital Balance Sheet of December 1912.

Heads of Accounts	Debit Tls. cts.	Credit Tls. cts.
Capital	£4,743,900.—.—.	36,175,203.750
Temporary Loans	£ 912,272.2.4.	6,685,352.933
Deutsch Asiatische Bank, Tientsin	63,005.111	
" " " Berlin	2,080.395	
Capital Cash Account (1)	83,728.809	
Interest on loan	6,495,686.103	
Interest received on bank deposits		1,114,005.449
Commission on Purchases	766,348.667	
Remuneration to the Syndicate and loan-service-expenses (2)	1,005,174.682	
Exchange		63,230.165
Traffic Earnings less traffic-expenditure		2,048,959.574
Directorate General, Peking	416,302.275	
Various Debtors	41,124.154	
Various Creditors		734,805.407
Foreign Railways		29,405.031
Final Heads as per Schedule A.	37,038,427.851	
Suspense Account as per Schedule B.	939,084.262	
	46,850,962.309	46,850,962.309

1. Cash on hand and at Chinese Banks
2. According to articles 20 and 7 Tientsin Pukow Railway Loan Agreement.

Schedule A. Capital Final Heads.

Heads of Account	Expenditure during the year 1912 Tls. cts.	Expenditure from the Commencement of operations Tls. cts.
*I. Landpurchase	1,616,875.151	1,813,795.508
II. Earthwork, etc.	273,936.319	1,713,359.227
III. Enclosures, excl. of the stations	2,067.960	3,691.796
IV. Level crossings	44,000.127	62,655.747
V. Bridges and passages	1,970,311.977	7,759,863.652
Va. Hoangho-bridge	1,439,922.639	4,545,611.418
VI. Tunnels	———	———
VII. Superstructure on the mainline on the stations	3,406,407.795	9,311,924.758
VIII. Signals and telegraphic signs	163,660.879	576,282.889
IX. Stations and Buildings	644,765.274	2,286,959.540
X. Workshops and Stores	257,058.221	710,764.061
XI. Extraordinary Works	25,152.708	166,793.362
XII. Rolling Stock	369,629.179	4,021,162.524
XIII. General Charges	520,078.878	3,411,413.472
XIV. Extraordinary	65,342.801	327,049.101
XV. Railway Police	164,386.292	327,100.796
Total	10,963,596.200	37,038,427.851

* Heading I.

The amounts paid for landpurchase by the Land Office and the Land Office Tsinanfu have not been verified so far by the Engineer-in-Chief.

Schedule B. Suspense Accounts.

Head of Accounts	Debit Taels cts.
Materials afloat	4,559.958
Head Store	70,946.650
* Store Tsinanfu.	754,889.935
Stores Divisional.	46,547.216
Telegraph Store	30,067.063
Fuel and Oil Account	9,859.585
Printing and Stationery	9,064.096
Miscellaneous Advances	10,665.709
Traffic Receipts	2,484.050
	939,084.262

* Store Tsinanfu.

The amount placed at the debit of this account does not give the final statement end of December, the final accounts having been retarded by stress of work, a final stock taking has been made middle of April.

Traffic-Earnings of the Year 1912.

1912	Passengers $ cts.	Goods $ cts.	Total $ cts.
January	———	———	192,141.28
February	———	———	140,593.90
March	———	———	184,290.96
April	157,671.25	62,016.11	219,687.36
May	152,642.38	54,005.55	206,647.93
June	116,993.77	40,955.05	157,948.82
July	123,870.40	52,876.64	176,747.04
August	137,990.80	78,236.26	216,227.06
September	148,796.58	128,173.16	276,969.74
October	171,089.05	167,788.26	338,877.31
November	179,885.82	151,010.72	330,896.54
December	197,438.73	190,993.60	388,432.33
			$ 2,829,460.27

KOWLOON-CANTON RAILWAY

(British Section)

ANNUAL REPORT FOR 1912

Mr. H. P. Winslow, Manager of the British Section of the Kowloon-Canton Railway, in his report for 1912 says:—

Construction

At the end of 1911 little construction work remained to be done with the exception of building the Terminal Station at Kowloon. The site for this has been under discussion during the year and it was finally decided to purchase K.M.L.'s 3, 9, 74 and 75. It was also necessary to acquire a portion of the land in the occupation of Messrs. Holt & Co. to gain access to the proposed New Station, and this has been arranged by exchange of an equal portion from Railway property. Mr. A. B. Hubback, F.R.I.B.A., Government Architect for the Federated Malay States, was, by the courtesy of the Chief Commissioner, appointed architect and submitted plans before the end of the year, which were approved. Work was commenced by raising the Praya Wall at Kowloon Point to such a level as to ensure the safety of the Yard against flooding during typhoons. The demolition of the warehouses and other buildings on the site was completed, the Head Offices of the Railway being transferred to a temporary building which on the completion of the new Station will be converted into quarters for the Staff. A considerable amount of preliminary work has also been done in the laying out of temporary sidings, the collection of building materials and the transportation of these to the site.

2. The pitching, draining and plastering of Cuttings Nos. 1 and 44 have been completed. An extensive catchwater drain above Cutting No. 47 has also been constructed, and it is hoped that this Cutting will give no further trouble

3. The Engine Pits in the Locomotive Running Shed mentioned in my last report were lengthened during the year to accommodate the two new Main Line Engines, and a contract for the construction of an extension to the Shed over these pits has been let to a local firm.

4. The Branch Line from Fanling to Sha Tau Kok was completed and opened to traffic on April 1st. Two sidings were laid, one at 1¼ and one at 4 Miles and a passing loop at Wo Hang Station.

Station Shelters have also been erected at each of the four Stations. This line is not ballasted with stone and considerable attention had to be given to it during the wet weather, but it is now in good running order.

Maintenance.

5. There have been no slips to either Cuttings or Banks during the year. The pitching to Bridge No. 10 (3 Spans of 40 feet, 40 feet high) was badly blown round the South abutment and the necessary repairs have been carried out.

6. The Main Line is now in a high state of efficiency. The road bed has become thoroughly consolidated and safe for the fastest speeds required. It was found necessary to lengthen the Sidings at Kowloon and Fanling Stations and to provide a fourth road of 1,200 feet at Hung Hom Station, for shunting operations.

7. The Signalling System has been improved by the adoption of a key box at each station, which holds the keys for locking the facing points, and only allows the proper combination of keys to be withdrawn at one time, all other keys remaining locked in until the first are returned. An advance Outer Signal has been erected at Hung Hom over the big Cutting. The work for the above was executed in the Railway Workshops.

8. The two additional Locomotives ordered from Home in 1911 and expected early in the year only arrived in the Colony on June 14th. The erection of the first was begun on June 22nd and she left the shops on Monday, July 8th, for her first steam trial, and was handed over to the Traffic Department on July 19th. The second made her first trial run on July 29th and was available for Traffic on August 2nd.

9. The erection of eight new carriages was commenced on the 13th of March. The first was completed on May 27th and the last on August 20th. All the First and Second Class Coaches have been fitted with electric fans.

10. For the Fanling Branch six two-foot Gauge Wagons with a capacity of 62 cubic feet were built and the six passenger Coaches were also fitted with new underframes with dust proof axle boxes.

11. The following are the most important works carried out in the Workshops during the year:—

One Second Class Carriage converted into First and Second Buffet Compo.

One Third Brake converted into Kitchen Brake

One Third Class into Second Class.

Two 30-Ton Covered Goods converted into Emergency Thirds to carry 100 Passengers each.

No. 5 First and Second Class Compo, was taken into the shops on September 2nd for general overhaul and revarnishing and returned to Traffic on October 4th.

No. 5 Hudswell Clarke Saddle Tank Locomotive has been thoroughly overhauled and fitted with axle boxes and a new fire box.

No. 1 Kitson Loco was supplied with a new set of coupled wheel axle boxes, the castings being obtained locally and machined in the shops.

12. As already stated two locomotives were expected early in the year, but did not actually arrive until the end of June. Some anxiety was occasioned when it became necessary to inaugurate an increased train service and, although only two locomotives were available, I am glad to say that this was effected and the service efficiently maintained, which reflects great credit on the Locomotive Staff.

Account—Capital.

13. The Expenditure to December 31st, 1911, on the Construction of the Railway was for the Main Line $11,984,515.13 and for Fanling Branch Line $36,987.64, making a total of $12,021,502.77.

During the year under report a further sum of $1,783,093.00 was voted by the Legislative Council. The purchase of the Station Site and also of Kowloon Inland Lot No. 1,132 for a residence for the Manager accounted for $1,515,879.25 and the two Locomotives and eight Coaches ordered in 1911 were paid for, the total under Main Line Account being $1,729,550.54, but credits afforded by sale of Construction Plant and profit on exchange reduced that figure by $487,418.58 and the net expenditure for the year stands at $1,242,131.96. On the Fanling Branch the 14 lb. rails put in were replaced by a heavier section rail. The amount expended was $20,790.55. The Expenditure against the Grant of $1,783,093.00 was $1,262,922.51 and shows a saving of $520,170.49.

Revenue and Expenditure.

14. The Revenue statement of earnings and expenditure shown in this Report follow the lines adopted last year. The Expenditure of all Departments has been carefully watched, and apart from the $25 88 shown as Special and Miscellaneous, the Estimates have been exceeded only in the case of Locomotive Expenses. The Excess under this heading amounts to $22,694.10 and is mainly due to an inadequate estimate of the amount of Coal required, only $13,500 being provided while the actual cost of Coal consumed was $29,743.99 It is probable that the improved Train Service was not contemplated at the time the Estimate was prepared.

15. The provision under General Stores also proved insufficient, and in addition it was found necessary to fit a new set of axle boxes to No. 1 Locomotive.

16. It will be observed that the Working Expenses compared with Gross Receipts show a marked decrease on the previous year. The actual working expenses were $207,350.78 against an estimate of $200,973.00. The Excess in the Locomotive Expenses, which is fully explained in the preceding paragraph, was reduced by savings in other Departments and the total Estimate was exceeded only by $6,377.78.

Revenue.

17. In view of the unsettled conditions prevailing in the Kwangtung Province it was not to be expected that Through Passenger Traffic would reach the estimated figure, and although fares were reduced and every encouragement offered, the Revenue from this source was disappointing. An increase of both passenger and goods traffic might be looked for when connection is made with the Canton-Hankow Railway.

18. The Revenue derived from Local Passenger Traffic is slightly less than in 1911. Every effort was made to secure goods, but development is slow and through goods traffic has been discouraged by the imposition of Likin. It is hardly likely that much improvement will be shown under the existing conditions.

19. It is gratifying to note that the Revenue exceeded working expenses by $34,298.24 which under the adverse circumstances may be considered satisfactory. Interest on Capital Account has not, however, been included in the Railway Account this year, as it was decided to debit this in future to the Public Debt.

20. It is regretted that the subject of Division of Joint Sectional Passenger Fares is still in abeyance, but it is hoped that this difficult question will soon be settled when the final adjustment between the two Sections may be affected.

21. I am pleased to report that the transactions of the Stores Branch have been efficiently carried out. The Stores are in excellent order and demands generally have been promptly met. Tenders were called for at the end of 1911 for all Local Supplies for 1912.

22. A revised list of Plant for Sale has been prepared and circulated and every effort has been made to dispose of Construction Plant and Stores but sales have been few as very little work has been in progress on which Plant of such a nature would be required.

23. No fatal accident occurred to the travelling public during the year and only one passenger sustained injury due to alighting from the Express Train in motion. There were no accidents to Railway servants. In spite of all precautions Chinese continue to trespass on the Railway and four were killed.

24. There have been no changes in the Staff.

CONSTRUCTION ACCOUNT—*Main Line.*

I. Main Head	II. Sub-head	III. ESTIMATES. 1910.	IV. Additions 1912.	V. Total.	VI. Expenditure to 31st December, 1912.	VII. Funds Available
		$ c.	$ c.	$ c.	$ c.	$ c.
I.—Preliminary Expenditure	Survey	42,277.65	....	42,277.65	42,277.65	....
II.—Land	Land	1,195,879.20	*1,473,879.25	2,669,758.45	2,250,185.25	419,573.20
III.—Formation	(*a*) Earthwork	2,587,580.00	....	2,587,580.00	2,558,410.82	29,169.18
	(*b*) Tunnels	3,811,145.19	....	3,811,145.19	3,807,482.63	3,662.56
	(*c*) Roads	120,200.00	....	120,200.00	118,363.64	1,836.36
IV.—Bridges	(*a*) Major	816,495.41	....	816,495.41	829,047.22	*12,551.81*
	(*b*) Minor	350,126.47	....	350,126.47	359,491.49	*9,365.02*
	(*c*) Culverts	72,546.09	....	72,546.09	71,567.78	978.31
V.—Fencing	(*a*) Boundaries	39,999.45	....	39,999.45	36,993.11	3,006.34
	(*b*) Signs	400.00	....	400.00	640.31	*240.31*
VI.—Telegraph	Telegraph	30,032.17	....	30,032.17	36,790.24	*6,758.07*
VII.—Track	(*a*) Ballast	130,066.54	....	130,066.54	158,703.37	*28,636.83*
	(*b*) Permanent Way	702,885.71	....	702,885.71	739,474.89	*36,589.18*
VIII.—Stations and Buildings	(*a*) Buildings and Fixtures	308,800.00	....	308,800.00	192,195.89	116,604.11
	(*b*) Station Machinery	40,000.00	....	40,000.00	32,494.95	7,505.05
	(*c*) Furnitures	5,000.00	....	5,000.00	12,323.90	*7,323.90*
	(*d*) Workshops	60,000.00	....	60,000.00	80,701.79	*20,701.79*
IX.—Plant	(*a*) Construction	101,884.53	....	101,884.53	176,360.34	*74,475.81*
	(*b*) Loco Tools and Plant	50,000.00	....	50,000.00	68,780.79	*18,780.79*
	(*c*) C. & W. Tools and Plant	10,000.00	....	10,000.00	25.00	9,975.00
	(*d*) Engineering	....	....	....	10.00	*10.00*
	(*e*) Loco Rolling Stock	74,400.00	† 45,000.00	119,400.00	193,509.63	*74,109.63*
	(*f*) C. & W. Rolling Stock	302,540.00	....	302,540.00	397,647.12	*95,107.12*
X.—General Charges	(*a*) 1. Salaries and Allowances	398,720.43	....	398,720.43	434,004.64	*35,284.21*
	2. Quarters and Offices	68,495.13	† 20,000.00	88,495.13	106,323.06	*17,827.93*
	3. Instruments	11,639.61	....	11,639.61	10,449.91	1,189.70
	4. Office Expenses	32,710.93	....	32,710.93	33,573.72	*862.79*
	5. Medical	22,319.46	....	22,319.46	23,071.90	*752.44*
	6. Home Charges	124,478.29	....	124,478.29	134,978.80	*10,500.51*
	7. Interest	713,922.67	....	713,922.67	701,705.62	12,217.05
	8. Exchange	200,000.00	....	200,000.00	*584,506.31*	784,506.31
	(*b*) Accounts	42,843.53	....	42,843.53	41,222.35	1,621.18
	(*ss*) Stores in Suspense	....	....	....	162,345.59	*162,345.59*
		$ 12,467,388.46	1,538,879.25	14,006,267.71	13,226,647.09	779,620.62

N.B.—Figures printed in italics are minus quantities.

* Financial Minute No. 25

† Special Expenditure, *vide* 1912 Estimates, page 91.

Fan Ling Branch

Construction 2' 0' Gauge.

Item No.	I. Main Head.	II. Sub-Head.	III. Revised Estimate.	IV. Expended to 31st December, 1912.	V. Funds Available.
			$ c.	$ c.	$ c.
1.	Land	.....	.....	2,364.21	*2,364.21*
2.	Earthwork	III*a*	.....	.....	.....
3.	Track Ballast	VII*a*	2,000.00	11.05	1,988.95
4.	Track—Permanent Way	VII*b*	29,307.00	42,218.38	*12,911.38*
5.	Station Buildings	VIII*a*	1,200.00	799.68	400.32
6.	Locomotives	IX*e*	13,600.00	6,553.60	7,046.40
7.	Carriages	IX*f*	7,000.00	5,521.67	1,478.33
8.	Salaries	X *a* 1	1,000.00	309.60	690.40
			$ 54,107.00	$ 57,778.19	$ *3,671.19*

Item No. 1.—No provision in Revised Estimate.

Item No. 2.—Work under this Head is chargeable to Public Works Extraordinary.

Figures printed in italics in Column V denote excess of Estimate.

CONSTRUCTION ACCOUNT—*Fanling Branch.*

Table of Expenditure, 1912.

Item No.	Main Head.	Sub-Head.	Expenditure to 31st December 1911.	Expenditure during 1912.	Expenditure to end of 1912.
1.	Land	II	2,200.00	164.21	2,364.21
2.	Track Ballast,	VII *a*	——	11.05	11.05
3.	Track, Permanent Way,	VII *b*	25,405.95	16,812.43	42,218.38
4.	Station Buildings,	VIII *a*	471.63	328.05	799.68
5.	Locomotives,	IX *e*	6,458.06	95.54	6,553.60
6.	Carriages,	IX *f*	2,142.40	3,379.27	5,521.67
7.	Salaries,	X *a* 1	309.60	——	309.60
			$36,987.64	$20,790.55	$57,778.19

FANLING BRANCH LINE.

Maintenance of Way, Works and Stations. Current Year.

ABSTRACT A.

		$ c.
1.	Overseer in Charge,	461.74
2.	Platelayers,	1,512.34
3.	Stores, Oil, etc.,	18.60
		1,992.68

ABSTRACTS B & C.

Locomotive Carriage and Wagon Expenses.

1.	Wages, Drivers and Firemen,	1,127.35
2.	Labour, connected with fueling, cleaning and looking after Engines in Yard,	99.31
3.	Contingent Expenses, including Clothing and Travelling Expenses,	20.00
4.	Labour, including Wages of Oilers, Carriage Cleaners and Examiners,	64.45
5.	Oil, Tallow and Other Stores expended on Engines in Work,	450.33
6.	Coal,	1,630.85
7.	Wages, Repairs and Renewal of Vehicles,	686.41
8.	Materials, Maintenance and Renewals of Locomotive,	629.76
		4,708.46

ABSTRACT D.

Traffic Expenses.

1.	Conductors,	874.23
2.	Brakesmen,	86.22
3.	Allowances to Staff in lieu of Quarters,	20.00
		980.45

ABSTRACT E.

General Charges.

1.	Printing Time Tables, etc.,	4.00
		4.00
	Total,	$7,685.59

CONSTRUCTION ACCOUNT—*Main Line.*

Table of Expenditure and Statement of Credits for the year 1912.

I. Main Head.	II. Sub-Head.	III. Expenditure to 31st December, 1911.	IV. Expended during 1912.	V. Less Credits by Exchange and Sales during 1912.	VI. Net Expenditure	VII. Expenditure to 31st December 1912.
		$ c.	$ c.	$ c.	$ c.	$ c.
I.—Preliminary Expenditure,	Survey,	42,277.65	....	....	....	42,277.65
II.—Land,	Land,	776,774.45	1,473,879.25	468.45	1,473,410.80	2,250,185.25
III.—Formation,	(*a*) Earthwork,	2,551,554.45	6,856.37	....	6,856.37	2,558,410.82
	(*b*) Tunnels,	3,808,582.63	....	1,100.00	*1,100.00*	3,807,482.63
	(*c*) Roads,	118,363.64	....	....	....	118,363.64
IV.—Bridge Work,	(*a*) Major,	829,047.22	....	....	....	829,047.22
	(*b*) Minor,	359,491.49	....	....	....	359,491.49
	(*c*) Culverts,	71,567.78	....	....	....	71,567.78
V.—Fencing,	(*a*) Boundaries,	36,469.67	523.44	....	523.44	36,993.11
	(*b*) Signs,	640.31	....	....	....	640.31
VI.—Telegraph,		36,790.24	....	....	....	36,790.24
VII.—Track,	(*a*) Ballast,	158,634.97	68.40	....	68.40	158,703.37
	(*b*) Permanent Way,	729,555.34	9,919.55	....	9,919.55	739,474.89
VIII.—Stations and Buildings,	(*a*) Buildings and Fixtures,	176,300.70	15,975.19	80.00	15,895.19	192,195.89
	(*b*) Station Machinery,	32,143.12	351.83	.....	351.83	32,494.95
	(*c*) Furniture,	11,293.28	1,030.62	....	1,030.62	12,323.90
	(*d*) Workshops and Stores,	77,293.75	3,408.04	....	3,408.04	80,701.79
IX.—Plant,	(*a*) Construction,	185,535.58	231.75	9,406.99	*9,175.24*	176,360.34
	(*b*) Loco Tools and Plant,	65,307.87	3,472.92	....	3,472.92	68,780.79
	(*c*) C. & W. Tools and Plant,	25.00	....	....	....	25.00
	(*d*) Engineering Tools and Plant,	10.00	....	....	....	10.00
	(*e*) Loco Rolling Stock,	110,611.03	82,898.60	....	82,893.60	193,509.63
	(*f*) C. & W. Rolling Stock,	289,445.51	108,201.61	....	108,201.61	397,647.12
X.—General Charges,	(*a*) 1. Salaries and Allowances,	433,172.65	831.99	....	831.99	434,004.64
	2. Temporary Quarters and Offices,	63,335.54	42,987.52	....	42,987.52	106,323.06
	3. Instruments,	10,654.03	51.40	255.52	*204.12*	10,449.91
	4. Office Expenses,	33,455.53	118.19	....	118.19	33,573.72
	5. Medical,	23,071.90	....	....	....	23,071.90
	6. Home Charges,	134,329.92	648.88	....	648.88	134,978.80
	7. Interest,	701,705.62	....	.....	....	701,705.62
	8. Exchange,	*110,997.29*	100.62	473,609.64	*473,509.03*	*584,506.31*
	(*b*) Accounts,	41,222.35	....	....	....	41,222.35
	(*ss*) Stores in Suspense,	186,769.20	*22,005.63*	1,417.98	*23,423.61*	162,345.59
	Bricks,	1,080.00	....	1,080.00	*1,080.00*	....
	Total,	11,984,515.13	1,729,550.54	487,418.58	1,242,131.96	13,226,647.09

N.B.—Figures printed in italics minus quantities.

REVENUE ACCOUNT *for the year ending December 31, 1912.*

1911	Per cent. on Gross Receipts	Expenditure	Abstract	Amount	Per cent. on Gross Receipts	1911	Earnings	Abstract	Amount	Total
$ c.	%	*Main Line.*		$ c.	%	$ c.	*Local*		$ c.	$ c.
34,272.26	23.31	To Maintenance of Ways and Works,	A	42,422.14	17.56	107,398.05	By Coaching Traffic	G	93,300.19	
51,560.62	35.06	„ Loco, Carriage and Wagon Expenses	B & C	84,616.10	35.02	12,515.41	„ Goods „	H	8,649.74	
32,902.29	22.37	„ Traffic Expenses	D	38,333.06	15.86	11,729.24	„ Sundry „	I	14,874.54	
53,121.77	36.12	„ General Charges	E	34,268.01	14.18	131,642.70	*Foreign.*			116,824.47
47.00	03	„ Special and Miscellaneous Expenditure	F	25.88	01	15,317.64	By Coaching Traffic	G	111,433.96	
						98.46	„ Goods „	H	7,139.15	
						..	„ Sundry „	I	..	
		Branch Line.				15,416.10	*Branch Line.*			118,572.11
		To Maintenance of Ways and Works,	A	19,992.68	82		By Coaching Traffic	G	5,782.72	
		„ Loco, Carriage and Wagon Expenses	B & C	4,708.46	1.95		„ Goods „	H	415.72	
		„ Traffic Expenses	D	980.45	41		„ Sundry „	I	24.00	
		„ General Charges	E	4.00	..					6,252.44
				207,350.78	85.81	147,058.80				241,649.02
171,903.94	116.89	„ Balance Net (Earnings)		34,298.24	14.19					
24,845.14	*16.89*	„ *Loss on Working*								
147,058.80	100.00			241,649.02	100.00	147,058.80				241,649.02

N.B.—Fanling Branch not in operation prior to 1912.

ABSTRACT A.

Previous Year $ c.	Maintenance of Way, Works & Stations.	Current Year. $ c.
	I.—General Superintendence:—	
6,646.07	1.—Salaries and Allowance of Engineers	6,092.26
1,171.93	2.—Sub-Inspectors' Salaries	3,430.87
—	3.—Allowances	365.81
671.24	4.—Office Staff and Expenses	3,165.66
8,489.24		13,054.60
	II.—Maintenance and Renewal of Track:—	
17,756.36	1a.—Wages—Ordinary Gangs.	11,858.90
—	1b.—Wages—Extra Gangs.	2,447.93
6,811.14	2a.—Ballast	3,436.37
468.87	2b.—Stores, Oil and Waste	1,087.77
94.50	2c.—Rails	112.20
—	2d.—Sleepers	46.40
—	2e.—Fastenings	—
1.20	2f.—Points and Crossings	49.58
25,132.07		19,039.15
	III.—Repairs of Bridges, etc.:—	
—	1.—Bridges and Tunnels	483.89
—	2.—Earthwork	4,468.97
2.00	3.—Fencing	84.01
—	4.—Roads and Level Crossings	80.70
22.70	5.—Miscellaneous Expenses	15.46
24 70		5,133.03
	IV.—Repairs of Station Building and Structures.	
626.25	1.—Repairs to Building of every description, including Station Yards and Signals.	1,506.35
—	2.—Staff Quarters	1,200.79
626.25		2,707.14
—	*V.—New Minor Works*	2,303.11
	VI.—Unclassified Expenditure.	
—	1.—Plantations	—
—	2.—Tools and Plant	185.11
—		185.11
$34,272.26	Total,	$42,422.14

Mileage maintained by Revenue:—

Double Line,	Nil.
Single Line,	22 Miles.
Sidings,	8 do.
Total Single Track, including sidings,	30 do.
Cost per Mile,	$1,414.07

ABSTRACTS B AND C.

Previous Year. $ c.	Locomotive Carriage and Wagon Expenses.	Current Year $ c.
	I.—General Superintendence:—	
6,457.18	1.—Salary of Superintendent	3,655.36
1,041.05	2.—Allowance	—
—	3.—Subordinate Superintendent	—
1,306.34	4.—Office Staff and Expenses	1,575.01
8,804.57		5,230.37
	II.—Running Expenses, Wages connected with Working of Loco Engines:—	
5,955.83	1.—Drivers and Firemen, etc.	3,615.73
372.23	2.—Overtime Allowance	393.78
1,430.86	3.—All labour connected with fuelling, cleaning and looking after Engines in Yard.	2,208.35
1,251.45	4.—Contingent Expenses, including allowances in lieu of Quarters, etc.	1,979.27
9,010.37		8,197.13
	IIa.—Running Expenses, in connection with Cleaning Carriages and Wagons:—	
4,814.07	1.—Labour, including Wages of Oilers, Carriage cleaners and Examiners	2,658.00
1,233.58	2.—Stores, including Oil Grease and other stores for consumption on Vehicles	1,588.43
6,047.65		4,246.43
12,817.15	*III.—Coal:—*	29,743.99
165.04	1.—Labour "Bunkering"	636.07
—	2.—Wood	116.00
12,982.19		30,496.06
91.22	*IV.—Water, including Wages and Stores.*	55.21
2,609.57	*V.—Oil, Tallow and other Stores expended on Engines in Work*	4,780.62
	VI.—Maintenance and Renewal of Locomotive Engines:—	
4,278.71	1.—Wages	9,313.31
37.84	2.—Overtime Allowance	—
2,460.08	3.—Material	10,711.71
6,776.63		20,025.02
	VIa.—Repairs and Renewals of Vehicles.	
	1.—Coaching Vehicles:—	
554.43	1.—Wages	2,826.54
—	2.—Overtime Allowance	213.00
479.77	3.—Material	3,313.92
1,034.20		6,353.46
	2.—Goods Vehicles:—	
3,374.77	1.—Wages	1,344.58
34.87	2.—Overtime Allowance	39.76
405.26	3.—Material	447.69
3,814.90		1,832.03
	VII.—Maintenance and Renewals of Machinery, Tools and Plant:—	
184.93	1.—Wages	1,316.37
204.39	2.—Overtime Allowance	—
—	3.—Material	3,083.40
389.32		3,399.77
$51,560.62	Total	$84,616.10

ABSTRACT D

Previous Year. $ c.	Traffic Expenses.	Current Year. $ c.
	I.—Salaries, Wages, etc.:—	
	General Superintendence:—	
5,152.77	1a.—Traffic Assistant and Inspector	4,648.58
3,170.66	1b.—Office Establishment	3,579.03
—	1c.—Travelling Allowance	—
96.00	1d.—Contingencies	—
14,402.78	2a.—Station Staff	17,081.87
4,924.52	3a.—Train Staff	6,277.01
154.24	3b.—Overtime Allowance	—
	Telegraph Staff.	
739.05	4a.—Wages	707.61
47.28	4b.—Stores	43.22
28,697.30		32,337.32
	II.—Fuel, Lighting and General Stores:—	
973.09	1.—Fuel, Lighting, Water and General Stores for Stations and Offices	1,977.31
1.62	2.—Wagon and Covers, Ropes, &c.	—
—	3.—Office and Station Fittings and Furnitures	272.24
974.71		2,249.55
553.80	*III.—Clothing.*	1,711.45
1,907.59	*IV.—Printing:—*	
	Cost of Tickets, &c.	1,521.89
	Salary of Printer	480.00
		2,001.86
—	*V.—Charges for Delivery & Collection of Goods, &c.*	—
768.89	*VI.—Miscellaneous Expenses.*	32.85
3,230.28		
$32,902.29	Total	$38,333.06

ABSTRACT E.

Previous Year. $ c.	General Charges.	Current Year. $ c.
	I.—Management, including Offices:—	
26,022.64	1.—Controlling Office	11,734.98
9,774.46	2 & 3.—Audit and Accounts Office	7,914.95
—	4.—Pay Office	2,103.23
4,928.57	5.—Stores	5,789.14
1,668.00	6.—Medical	—
1,517.32	7.—Conservancy	1,817.91
2,645.00	8.—Rent of Buildings and Land	1,234.38
899.59	9.—Furniture, Fittings, etc.	1,611.32
1,250,66	10.—Printing and Stationery	424.83
41.60	11.—Medicine and Contribution to Hospital	—
48,747.84		32,630.74
	II.—Police:—	
—	1.—Supervision	199.00
2,222.37	2.—Constables	1,093.66
241.72	3.—Contingencies (Watch and Ward other than 1 and 2)	—
2,464.09		1,292.66
	III.—Advertising:—	
1,909.84	Advertisement of all Departments	344.61
$53,121.77	Total	$34,268.01

ABSTRACT F.

Previous Year, $ c.	Special and Miscellaneous Expenditure.	Current Year. $ c.
—	*I.—Land Charges*	—
—	*II.—Compensation*	—
47.00	1.—For Goods lost or damaged	7.88
47.00		7.88
—	*III.—Rates and Taxes including Municipal Water Rates*	—
	IV.—Prizes for best kept length of road	18.00
$47.00	Total.	$25.88

ABSTRACT H.

Goods Traffic.

Local Earnings.

Previous Year. $ c.	Particulars.	No.	Amount. $ c.
12,515.41	General Merchandise, . . . Piculs.	142,465.72	7,268.59
.....	Government Stores, ... ,,	3,349.00	1,077.72
.....	Live Stock, ... Number	1,422.00	303.43
$12,515.41	Total,		$ 8,649.74

N.B.—16·75 Piculs are taken as the equivalent of a ton.

ABSTRACT I.

Sundries.

Local Earnings.

Previous Year. $ c.	Particulars.	Current Year. $ c.
7,800.00	Rents of Land,	11,652.52
720.75	Rents—Stall Holders, Money Changers at Stations,	419.00
1,987.95	Hire of Engines and Wagons (Maintenance),	2,194.37
354.64	Water Supply to Steam Launches,	399.15
.....	Storage,	1.00
865.00	Wharfage—Blackheads Point,	155.00
—	Telegraph,	2.05
... ..	Sale of Ashes,	20.00
.90	Proceeds by sale of Lost Luggage,	1.00
.....	Miscellaneous.	30.45
$11,729.24	Total,	$ 14,874.54

ABSTRACT G.

Coaching.

Foreign Earnings.

From 7th October to 31st December, 1911. Number.	Amount. $ c.	Particulars.	Current Year. Number.	Amount. $ c.
		Outwards.		
257½	.....	First Class,	1,391⅛	.....
1,218½	.....	Second Class,	6,795	.....
14,424½	6,829.16	Third Class,	114,204	51,156.15
.....	23.58	Passengers' Luggage, Parcels, Excess Fares,	.....	35.42
15,900½	6,852.74		122,390⅛	51,191.57
		Inwards.		
466	.....	First Class,	1,882	.....
2,395	.....	Second Class,	7,382	.....
13,803	8,417.00	Third Class,	125,319	59,493.90
.....	47.90	Passengers' Luggage, Parcels, &c., &c.	.....	747.49
32,564½	$15,317.64	Total,	256,973½	$111,432.96

ABSTRACT H.

Goods Traffic.

Foreign Earnings.

From 7th October to 31st December, 1911. $ c.	Particulars.	Current Year. Number.	Amount. $ c.
	General Merchandise.		
.....	Inwards . . . . . Piculs,	58,511	3,544.67
98.46	Outwards . . . . . ,,	72,743	3,594.48
$98.46	Total,	131,254	$7,139.15

ABSTRACT G.

Fanling Branch Earnings.

Coaching Traffic.

	Third Class only.		Total.	
Single Fare per Mile.	About 3 cents.			
I.—Passengers.	Number.	Amount. $ c.	Number.	Amount. $ c.
Ordinary,	42,919	5,361.35	42,919	5,361.35
Monthly,	21	90.00	21	90.00
Total,	42,940	5,451.35	42,940	5,451.35
II.—Parcels,	Piculs	252.64		19.97
III.—Country Produce,	do.	1,562.00		311.40
			Total,	$5,782.72

ABSTRACT H.

Fanling Branch Earnings.

Goods Traffic.

Particulars.		Number.	Amount. $ c.
General Merchandise,	Piculs	4,036.50	408.59
Government,	do.	412.50	37.13
Total,			$ 445.72

ABSTRACT I.

Fanling Branch Earnings.

Sundries.

Particulars.	Current Year. $ c.
Rent of Land,	24.00
Total,	$ 24.00

N.B.—Fanling Branch not in operation prior to 1912.

Statement of Train Mileage.

MAIN LINE.

Year ending 31st December, 1911. Miles.	Particulars.	Year ending 31st December, 1912. Miles.
49,286	1.—Train miles run for Public Traffic	84,096
1,203	2.—Train miles run for Maintenance	1,543
50,489	Total Train Mileage	85,639
16,425	3.—Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour,	73,656
.....	4.—Miles run for Loco purposes,	1,500
66,914	Total,	160,795

FANLING BRANCH.

Year ending 31st December, 1911.	Particulars.	Year ending 31st December, 1912.
.....	Train miles run for Public Traffic	18,948
.....	Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour	10,800
.....		29,748

N.B.—Fanling Branch not in operation prior to 1912.

STATEMENT OF ROLLING STOCK *for the year ending 31st December, 1912.*

DESCRIPTIONS.

LOCOMOTIVES.

Tender or Tank.	Type.	No.	Cylinder.	Pressure per sq. in.	Tractive Force.	Total Weight in Working Order.	1 Total Stock at end of previous year.	2 Additions during the year.	3 Reductions during the year.	4 Total stock at end of the year.	5 Actual stock in running order on the last day of the year.	6 Repairs and Renewals. Number Repaired during the year.	7 Number Renewed during the year.	8 Number undergoing or awaiting Repairs on the last day of the year.	9 Number undergoing or awaiting Renewals on the last day of the year.	10 Average Number undergoing Repairs or Renewals at any one time.	11 Stock condemned in this and previous years awaiting replacement.
				lbs.	*lbs.*	*Tons. cwt.*											
Side Tank	*Kitson* 2:6:4: 4′ 8½″ Gauge	4	19″ × 26″	180	24,724	89 15	2	2	0	4	4	4	0	2	2	1	0
Saddle Tank	*Hudswell Clarke* 0:6:0: 4′ 8½″ Gauge	2	14″ × 20″	150	10,604	29 7	2	0	0	2	2	2	0	1	1	1	0
Side Tank	*Hudswell Clarke* 0:4:0: 2′ 0″ Gauge	2	6″ × 10″	150	1,800	5 3	2	0	0	2	2	2	0	1	0	1	0
Loco Crane	*Wilson & Co.* 0:4:0: 5-Ton Lift.	1	8″ × 10″	80	..	15 0	1	0	0	1	1	1	0	0	0	1	0
Total, . .		9					7	2	0	9	9	9	0	4	3	3	0

COACHING VEHICLES. 4′ 8½″ Gauge.	Quantity.	Length of Underframes in feet.	Tare.	Carrying Capacity Passengers.											
First Class Carriages	1	60′11″	36 Ts.	50	1	0	..	1	1	1	..	..	..	..	..
Second Class Carriage	1	60′11″	34 „	84	1	0	..	1	1	1	..	..	..	..	..
First and Second Composite Carriages .	2	60′11″	35 „	68	1	1	..	2	2	2	..	..	..	..	..
First and Second Composite and Kitchen Carriages	1	60′11″	35 „	60	0	1	..	1	1	1	..	..	..	2	..
Third Class Carriages.	8	60′11″	32 „	120	3	5	..	8	8	8	..	..	..	..	..
Third Luggage and Brake	2	60′11″	35 „	84	1	1	..	2	2	2	..	..	..	..	..
Kitchen Luggage and Brake.	1	60′11″	35 „	.	*1	0	..	1	1	1	..	..	..	..	..
Total, ...	16	..	..	..	8	8	..	16	16	16	..	..	..	2	..

Coaching Vehicles 2′ 0″ Gauge.

Carriages	6	9′ 0″	11 Cwt	10
Bogie Brake Vans	2	16′ 0″	15 „	..
Goods Wagons	6	9′ 0″	10 „	..
Total, ...	14	..	..	..

*Altered from I, II and III Brake.

GOODS VEHICLES.	No.	Length of Underframes in feet.	Tare. Ton	Tare. cwt.	Carrying Capacity (Tons).										
30-Ton Covered Goods . . .	5	35	15	5	30	5	..	..	5	5	5	..	..	..	..	..
30-Ton Rail Bogie	1	35	13	8	30	1	..	..	1	1	1	..	..	..	..	..
30-Ton Open Goods	6	35	14	8	30	6	..	..	6	6	6	..	..	..	..	..
15-Ton Covered Goods. . . .	16	19	8	10	15	16	..	..	16	16	16	..	..	..	..	..
15-Ton Converted Goods . . .	8	19	8	10	50 Passengers.	8	..	..	8	8	8	..	..	..	..	..
15-Ton Cattle Trucks	2	19	8	10	15	2	..	..	2	2	2	..	..	..	..	..
15-Ton Open Goods	10	19	7	16½	15	10	..	..	10	10	10	..	..	..	..	..
15-Ton Goods Brake Vans . .	2	19	15	..	15	2	..	..	2	2	2	..	..	..	..	..
Total, ...	50	..	..		..	50	..	..	50	50	50	..	..	..	..	..

ABSTRACT G.

COACHING TRAFFIC.

Local Earnings.

Previous Year $ c.	Single Fare per Mile. *I.*—Passenger.	1st Class About 8 cents. Number.	Amount.	2nd Class About 4 cents. Number.	Amount.	3rd Class About 2 cents. Number.	Amount	Total Number.	Amount.
	Ordinary	1,668	2,522.30	7,645	5,549.65	274,248	70,917.40	283,561	78,989.35
	Government,	662	851.25	1,541	893.90	7,585	2,800.10	9,788	4,545.25
	Monthly,	1	7.50	32	330.10	122	2,056.56	146	2,394.16
	Excursion,	1,627	2,440.50	1,422	1,273.50	1,481	888.40	4,530	4,602.40
	Excess Fare,	48	65.95	133	89.15	1,309	398.30	1,490	553.40
	Aviation,	408½	408.50	..	..	413½	165.40	822	573.90
$105,271.57	Total,	4,414½	6,296.00	10,764	8,136.30	285.158½	77,226.16	300.337	91,658.46
	Previous Year	2,910	5,751.46	12,796½	9,378.19	304,072	40,141.92	319,778½	
413.51	*II.*—Passengers' Luggage,						Piculs.	99.67	18.00
171.04	*III.*—Parcels,						„	10,117.83	192.89
1,510.13	*IV.*—Country Produce,						„	12,523.63	2,501.30
1.80	*V.*—Live Stock,						Number.	....	....
	VI.—Carriages, Horses and Dogs,						„	237.00	73.15
	VII.—Cloak Room Fees,						„	45.00	4.80
	VIII.—Special Trains,						Miles.	135.73	1,026.00
									95,474.60
	Deduct payment to Star Ferry on account of Ferry Service						....	....	2,174.41
$107,398.05					Total;				$93,300.19

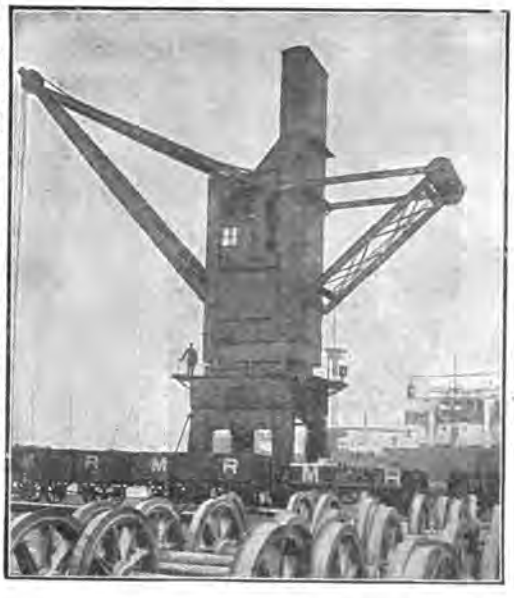
THE PRESERVATION OF IRON BY "ROSPHALTIC" SOLUTION

The problem of the cause of corrosion of iron and its prevention has received the consideration of scientists for a number of years. Many theories have been propounded, and much difficult experimental work carried out to prove or disprove these theories. A definite theory for the corrosion of iron has not yet been found, but is apparently not far from being enunciated. The probability is that a combination of what is known as the "acid theory" and the "electrolytic theory" will prove to be the true one, and much experimental work, some of which has been carried out by a member of the firm of Messrs. Rudd & Owen, of Hull, a chemical engineer and technical research chemist, appears to confirm this view.

In spite of the great amount of work carried out by scientists, owners of iron structures do not, as a whole, give that amount of consideration which is due to such an important matter. We cannot do better at this point than bring before our readers the disaster to the Charing Cross Railway Station where the massive structural ironwork roof collapsed with such terrible results. Upon investigation this was found to be entirely due to corrosion weakening the whole structure to its fall. Seeing this structure was under the cover of the glass and coated with paint the natural question is—Why should it corrode? The answers to this are: (1) Ordinary paint is not an efficient iron protective, for reasons which are discussed below; and (2) Iron is very slightly soluble in water; all iron and steels contain softer and harder portions, and electric currents are set up between these portions in the presence of moisture. Acid moisture increases the solubility of iron. The iron in solution, which passes with the current, is precipitated by the oxygen and carbonic acid in the atmosphere, thus forming rust. In the crossing and recrossing of bars, angles, etc., in structural iron-work there is great liability of potential differences being set up at points of contact.

This important subject has been uppermost in the minds of Messrs. Rudd & Owen for some years, and, as mentioned before a member of the firm, has given much time and thought to it. Careful experiments have proved that iron and steel rust very rapidly indeed when moisture and very minute traces of acid bodies are present. In the mists and rains which occur in all parts of the world traces of acids of various kinds always exist; thus rusting occurs the world over. Tiny electro currents, it was found, stimulate corrosion and the increased use of electricity for lighting and motive power, always accompanied with what are termed "strag currents," render it necessary that immediate consideration be given to methods of protection of all structural work which may come under their influence.

One of 7 Coal Hoists at Alexandra Dock, Hull, coated with "Rosphaltic"



25-ton Electric Crane painted with "Rosphaltic"

Attention was first paid to the so-called iron protectives which have been in use for a large number of years—the linseed oil paints. Chief amongst these are the red-oxide and the red-lead preparations. On carefully examining the medium, linseed oil, which produces the film and holds the pigment together, it was found that when dry it absorbed moisture from the atmosphere; the average amount absorbed according to many experiments was 4 per cent. Experiments proved that acid bodies, which act upon iron, were formed during the drying of the film and its subsequent exposure to the atmosphere. The pigments employed with the linseed oil, in the average number of cases, proved to be electro-negative to iron: all substances which are electro-negative to iron increase the rate of corrosion.

The results of these investigations clearly pointed out that oil paints, and in particular red-oxide and red-lead paints, are the very worst materials to use for iron protection. Practical experiments were carried out with oxide-oil paints, using preparations made up with materials containing no linseed oil or pigments for comparative purposes (controls). In all cases the oxide-oil paints broke down within nine months, much rust being evident, whilst the ontrols remained perfect up to periods of eighteen months, two years, and longer. These experiments proved conclusively that linseed oil pigment paints (red oxide and other kinds) are inferior as iron protectors.

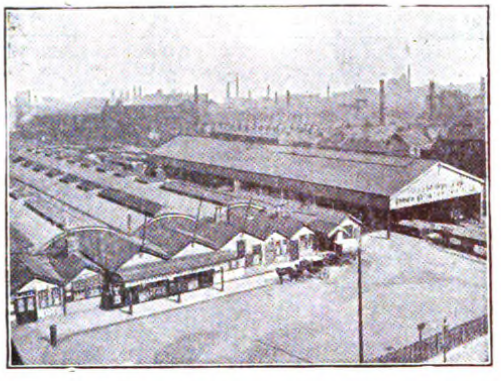
Careful experiments were now carried out with the ingredients of which the best of the controls was made, and with other materials, with the object of making a first-class iron protective solution, possessing great flexibility and lasting power, resistance to the passage of electric currents and moisture, freedom from deposit, high flash point and great covering power. Care was taken also that the materials used should not act upon metal, and should be capable of resisting chemical fumes, salt water, etc.

The result of many expensive experiments was Rosphaltic solution, which requires no stirring and possesses all the properties just mentioned, making it the best and at the same time the cheapest iron protective on the market. The important fact that one hundredweight of Rosphaltic solution covers 4,500 square feet of metal surface with two coats, which is three times the area covered by the best oil paints, and very nearly twice the area covered by other preparations, should not be lost sight of. Also its high flash point reduces very considerably the risk of fire.

The vast importance of the result of Messrs. Rudd & Owen's researches was so manifest to them that they immediately took the precaution of registering the name of "Rosphaltic" for their solution. The title is derived from R. & O.'s asphaltic solution. They have also designed the label which is now used on all barrels, in advertisements, etc., in order that purchasers can become quite familiarised with its form and know that they are getting the genuine solution. All the firm's barrels show their monogram which is also found on packages containing other manufactures of Messrs. Rudd & Owen.

Rudd & Owen are also manufacturers of Rosco Galvanizing Paint (Pure Aluminium) for decorative purposes., Blofil Iron Cement for stopping leaks, repairing castings, filling blow holes, etc., Stoving Blacks, Decorative Art Blacks Rosco Damp Resister for arresting damp in walls, Roscophalt coloured Bituminous Paints, Fillings for Iron, etc., etc.

An interesting booklet showing examples of ironwork treated with Rosphaltic and giving much desirable information will be gladly sent to any readers applying direct to Messrs. Rudd & Owen, Hull. We reproduce views of some of the numerous iron structures which have been protected by Rosphaltic solution.



Roof of Important Stations in Hull and Barnsley Railway Painted with "Rosphaltic"

Sports Club, Johannesburg, all Ironwork treated with "Rosphaltic"

SALT INDUSTRY IN KOREA

The *Osaka Mainichi* notes that the industry of salt refining at Chemulpo was counted among one of the most promising enterprises in Korea. At one time there were 31 salt refineries in Chemulpo, and the annual value of the salt produced there was estimated at between Y.700,000 and Y.800,000. The industry is one that can be conducted with a comparatively small capital, but even the Mitsui Bussan Kaisha directed attention to the industry, and refineries cropped up at Kunsan and other places. The anticipated success of these enterprises, however, has not been attained, although the process of refining salt in Korea is very simple. Crude salt is brought over from China by junk, and is dissolved in salt-water and then boiled. The salt so refined is whiter than the salt refined in Japan, and at first there was a large demand for the salt refined in Korea, but the quality is very poor. The Koreans found it unfit for use, and now the Chinese salt thus refined is used only in small quantities mixed with Korean salt. It has been found quite unsuitable for preserving fish, the brine being very poor. Of the 31 salt refining factories at Chemulpo, only one or two are still continuing operations, and there is no prospect of the recovery of the industry.

THE PUKOW SETTLEMENT

Mr. B. G. Tours, British Consul in Nanking, in his report on the trade of that port for 1912 says: No visible progress has been made in the matter of the development of the Pukow settlement at the southern terminus of the Tientsin-Pukow Railway, on the north bank of the Yangtze river, opposite Nanking. Much has been lost by the want of foresight of those responsible in not having had a settlement scheme ready to be put in hand as soon as the railway was sufficiently near completion. After the railway was completed a special commissioner was appointed to undertake the work of arranging for the establishment of a settlement at Pukow. He unfortunately died, and a successor was appointed; this gentleman commenced his work by proceeding to Tsingtao and Tsinan to study the settlements in those places, it being the idea of the Chinese authorities to make the Pukow settlement an example to the world of what China can now do in this direction, with her own brains and hands, and with her own money when she has any. The ambition is worthy enough, but preliminary difficulties of erecting a suitable and adequate settlement on ground which is 12ft. or more under water at the time of summer high water, and of financing the necessary municipal buildings, wharves, lighting, water supply, godowns, etc., are not inconsiderable. The special commissioner is doing his best with the avalanches of advice which pour upon him, but it will be some time before any scheme is properly in train, and some years—probably five or six—before the settlement is in practicable shape.

In order to protect the valuable records of the U. S. Government from danger by fire Congress has made an appropriation for the installation of a modern system of auxiliary fire protection for three of the largest buildings occupied by the Department of the Interior in the city of Washington. A committee has been appointed to investigate the relative merits of systems adaptable to the buildings of the Department and to prepare plans and specifications. All communications regarding the subject should be addressed to the Chief Clerk of the Interior Department, Washington, D. C.

The Engineer hears that a steam turbine of 40,000 horse-power will be erected in the Hagen electric power station, Westphalia, Germany. This is said to be the largest turbine unit yet built. The present largest units are the two 30,000 horse-power turbines of the Rhine Westphalia Company, Düsseldorf, which were erected during 1912.

FAR EASTERN RAILWAYS

CHINA

Yunnan Railways.—Reuter's Peking correspondent reported on August 19 that an offer had been made to the Governor of Yunnan by Messrs. Carlowitz through their Hongkong manager, who is also a director of the Hongkong and Shanghai Bank. Messrs. Carlowitz offer £3,000,000 for the construction of a railway from Yunnanfu Eastwards to Peso on West River(? Poseh in Kiangsi). Messrs. Carlowitz offer to furnish both railway material and to finance the undertaking at interest of 5½ per cent. Carlowitz, who represent Krupp's to have for a period of twenty years a monopoly of all Government contracts for the supply of arms and ammunition and all mining and other machinery, and an extensive series of mining concessions along the course of the proposed railway.

Canton-Hankow Railway.—In his report on the trade of Hankow for 1912, Mr. F. A. Carl, Commissioner of Customs, writes, in part. as follows:—

I am indebted to Mr. A. H. Collinson, engineer-in-chief of the Canton-Hankow Railway, for the following interesting remarks on railway work in the Hupeh-Hunan section:—"Survey work was resumed in June last, since when the whole route of the railway has been resurveyed from Wuchang to Yochow, a much better alignment has been obtained, and a saving in length made of slightly more than 11 miles compared with the original survey. The distance by the new route from the zero (which is some 2 miles to the north of Wuchang) to Yochow is 142 miles. The difference in level between the Customs low-water zeroes at Hankow and Yochow is 17.50 feet. The line as finally laid down will pass some 3 miles to the east of Chengling, it having been decided that the traffic prospects at this port do not justify a costly deviation, which would be necessary to bring the railway nearer the town. Access to the river will be obtained by a short branch near the North Gate at Yochow. Between Yochow and Changsha it has also been decided to make a new survey, and three parties are at present engaged on this work, and, from what can be gathered from their preliminary survey, a further saving in length of some 14 miles will be obtained. The policy of keeping inland away from the river, is being followed, and the original somewhat lengthy deviation to Siangyin has been abandoned. The probable distance by the new route from Yochow to Changsha will be about 82 miles, or 225 miles from Wuchang. The difference in levels of the Customs zeroes at Yochow and Changsha is 30.13 feet, making a total rise from Wuchang of 47.63 feet. From Changsha to Chuchow, a distance of 30 miles, a railway has been constructed by a provincial company, which will eventually be merged in the main line to Canton—negotiations for its transfer are still proceeding. Some hundreds of miles of reconnaissance survey have been made from Chuchow to Hengchowfu, and south to Ichanghsien, on the borders of Kwangtung, the country between the latter cities being mountainous and difficult for railway construction. The line has not yet been definitely located beyond Chuchow, but sufficient information has been obtained to estimate approximately the distance by rail from Wuchang to Canton, which will probably not exceed 700 miles. At the present time the engineering staff are busily engaged in completing the survey work, and everything is in readiness to commence construction on the section from Wuchang to Yochow at an early date. The engineers report having met with nothing but friendliness and civility from the officials and country-poeple throughout, and that everyone seems anxious for the construction work to commence. Traffic prospects are also reported to be very good; the line will pass through the tea districts at Yanglowsze and Yanglowtung, while the country south to Changsha and beyond is highly cultivated and prosperous; the railway will tap very rich mineral districts in Hunan, and will no doubt become a great factor in the development of this profitable industry."

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended July 19 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	54,840	10,955	65,795
1912....	34,611	8,364	42,975
Increase.	20,229	2,591	22,820
Decrease	—	—	—

For twenty-eight weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,373,260	305,763	1,679,023
1912....	1,320,750	196,046	1,516,796
Increase.	52,510	109,717	162,227
Decrease	—	—	—

Week ended July 26.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	41,066	8,494	49,560
1912....	33,955	8,493	42,448
Increase.	7,111	1	7,112
Decrease	—	—	—

For twenty-nine weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,414,326	314,257	1,728,583
1912....	1,354,705	204,530	1,559,244
Increase	59,621	109,718	169,339
Decrease	—	—	—

[The train service was suspended between Changchow and Nanking on July 22. The night train was cancelled on July 23.]

Week ended Aujust 2.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	28,087	5,014	33,101
1912....	32,111	9,058	41,169
Increase.	—	—	—
Decrease	4,024	4,044	8,068

For thirty weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,442,413	319,271	1,761,684
1912....	1,386,816	213,597	1,600,413
Increase.	55,597	105,674	161,271
Decrease	—	—	—

[The western portion of the line was closed on account of the rebellion and trains were run on an average of 121 miles open.]

Week ended Aujust 9.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	23,884	5,598	29,482
1912....	33,718	9,348	43,066
Increase.	—	—	—
Decrease	9,834	3,750	13,584

For thirty-one weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,466,297	324,869	1,791,166
1912....	1,420,534	222,945	1,643,479
Increase.	45,763	101,924	347,687
Decrease	—	—	—

[Woosung Line traffic closed down entirely from August 3. Main Line: No train running beyond Tanyang this week.]

Wuhu Railway Schemes.—The British Consul at Wuhu, in his report on the trade of that district for 1912, writes:—

The Tientsin-Pukow Railway runs through the north-east of the province.

The railway schemes in the air are:—

(1) Hsin Yang-chou, on the Peking-Hankow line to Pukow, the terminus of the Tientsin-Pukow line. The concession, dating from 1898, is in the hands of the British and Chinese Corporation. Arrangements have been made for the survey, and the line will doubtless be built in due time.

(2) Wuhu to Kuangte and Hangchow The scheme was first mentioned in the trade report for 1905. The company which undertook the construction was purely Chinese and unofficial. The result has been some earthworks for a dozen miles or more, one or two wooden bridges and 100 yards of line laid.

(3) Wuhu to Nanking. This scheme was mentioned in the trade report for 1907.

(4) Hsinyang, on the Hankow line, to near Peng-pu on the Pukow line *via* Shouchou and the valley of the Huai River.

(5) Anking to Shouchou.

The last four are Chinese and will remain ideas on paper without any chance of being completed so long as they are in Chinese hands.

A Consular report from the Chinkiang district of China says:—The traffic to and from Chinkiang station by the Shanghai-Nanking Railway continues to increase, and does not yet seem by any means to have reached its limit of expansion. The arrangement by which goods covered by transit pass are allowed to be carried by rail, an arrangement which has been desired for some years, and only brought about in 1912, has affected the railway returns most favourably.

The Kiangpei Railway scheme has formed a topic for much discussion during the year; but for all practical purposes it might as well have not been agitated, for no progress towards definite action has been made. There have been abortive attempts to raise loans for the purpose, but a feeling is beginning to grow up that, so far as Chinkiang is concerned, the improvement of the canal is of primary, and railway of secondary, importance.

Changsha-Chuchou Line.—Mr. Consul Bertram Giles, British Consul at Changsha, writes in the course of his annual report:—

The bridges on the Changsha-Chuchou line were completed during the year under review, many of them having hitherto been merely temporary trestle bridges. Traffic was carried on without interruption, two trains having been running each way since January, 1912. So far but little goods traffic has been attracted, carriage on the adjacent waterway—the Siang River—being so much cheaper. A certain quantity of coal has, however, been carried from P'inghsiang to Changsha—not the coal of the P'inghsiang collieries, but of smaller mines worked by private companies. A European firm obtained a 200,000 tael order (about £30,000) for additional rolling stock, and a British firm a large order for tools and steel.

A further section from Chuchou to Luk'ou, about 30 *li* (10 miles) in length, was commenced at the end of September, and towards the middle of December about nine-tenths of the earthworks and one-half of the bridge and culvert work reported completed. Two European firms obtained the order for the rails. This section will probably be opened to traffic some time in 1913.

Down to the end of September the capital expenditure on the line, only 33 miles in length, amounted to close on Tls. 6,500,000 (about 690,000). This was stated by the chairman of the railway ata meeting of shareholders held early in October. When the cost of the Chuchou-Luk'ou section, since incurred, is taken into consideration, it will be seen that the total expenditure cannot fall far short of Tls. 7,000,000 (about £1,000,000) for a railway 43 miles in length, of which only 33 miles are completed. When, in addition, it is remembered that the line is very badly laid, that much of the rolling-stock is inferior, and that the receipts are exceedingly small, it will hardly seem surprising that the shareholders should have acquiesced in the policy of nationalisation. On the other hand, they want the whole of the money squandered on a short section of ill-constructed line refunded before they will stop work or hand over the line to the Central Government.

In the meantime the rough survey of the line by British engineers, which was interrupted in 1911 by the outbreak of the revolution, has been completed, and a more detailed survey from the Hupei border to Yochow and thence direct to Changsha, avoiding Siangyin, which it was originally intended to touch, is being carried out, and the actual work of construction is, I understand, to be taken in hand in May, 1913.

The Chuchou-P'inghsiang line is now being reorganised with a view to the regular carriage of passengers and general merchandise, as well as coal. The permanent way is being repaired and strengthened, the old rolling-stock is being patched up, and an order for an additional locomotive and three passenger coaches has been placed in Germany.

The additional levy in aid of railway construction, based on the amount of land tax paid, was resumed last summer, and has hitherto been devoted to work on the Chuchou-Luk'ou section. When the Hankow-Canton trunk line has been nationalised this levy, supplemented by the purchase price paid by the Central Government for the section already built, and possibly also by a foreign loan, is to be devoted to the construction of branch lines. A number of proposals for such branch lines have already been put forward, but in no single case do the financial and other practical aspects of the question appear to have been given a moment's consideration. It is stated that a start will be made with a railway line from Changsha to Changteh and on to Ch'en Chou-fu. Even this line, however, has little chance of being completed at all, much less at a cost which will enable it to cover its working expenses, unless the shareholders will consent to both the construction and the expenditure being placed under foreign supervision.

Railways in Shantung.—The details of the amalgamation of the Shantung Mining Co. and the Shantung Railway have now been ascertained. The stockholders of the railway, in session at Berlin, voted to pay $1,285,000 in railway shares to the shareholders of the mines. It is reported that the main offices will be removed from Germany to Tsingtau. The railway runs from the port of Tsingtau west to Tsinanfu, where it connects with the north and south Tientsin-Pukow Railway. The Shantung Railway carried 908,000 passengers and 705,074 tons of freight in 1911, while the mining company had an output of 459,175 tons of coal.

The long-discussed projects of the Kaumi-Ichoufu railroads and of a steel plant for Tsingtau have been revived. Careful surveys of the commercial possibilities of the territory through which the railroad would pass were made by the German officials toward the close of 1912. The railroad manager in Tsingtau considers the present situation in Europe the chief obstacle to progress on either of these projects. He also states that in his opinion the taxes which would be levied on a steel plant built on Chinese territory will make it necessary to build in Kiaochou, and it is understood that the selection of a site has been discussed with the local government.

Mallet type locomotive constructed by the American Locomotive Company for the Imperial Government Railways of Japan

JAPAN

New Light Railways.—The Japanese Railway Board has granted charters for the construction of light railways to the following railway companies:—

Higashino Railway Company to connect Nishi Nanuno, Nasu district, Tochigi prefecture, with Taishi, Kuji district, Ibaraki prefecture, and also Kawanishi, Nasu district, Tochigi prefecture, with Karasuyama in the same district.

Asama Tozan Railway Company to connect Asama with Fujimi Pass in Yogo village, Watarai district, Miye prefecture.

Seidaiji Light Railway Company to connect Seidaiji with Kubata in Kamimichi district, Okayama prefecture.

Chosu Railway Company to connect Fukagawa with Nishi in Otsu district, Yamaguchi prefecture.

Koya Tozan Railway Company to connect Tsumori Nishinari district, Osaka-fu, with Kizu Kirashima-cho, Minami ward, Osaka city.

Koya Tozan Railway Company to connect Hashimoto with Sumida in Itsu district, Wakayama prefecture.

Awa Electric Light Railway Company to connect Horie with Itanishi in Itano district, Tokushima prefecture.

THE PHILIPPINES

The Manila Railway.—The proprietors of the Manila Railway Company (1906), (Limited), which company owns the securities of the Manila Railroad Company, were to meet on July 24 to receive the report and accounts for the year 1912, and the debenture-holders to consider a proposal to extend the present authorized issues of "A" Debentures and "B" Debentures by £500,000 each. It is necessary to an understanding of this proposal, and of the future of the railway property which the British company indirectly owns, to realize that the railway is still to a large extent in course of construction. Although it is 25 years since the old British company came into existence t

take over a concession from the Spanish Government for the construction of a line some 122 miles in length, the present development of the property may be thus summarized; out of a projected 820 miles of road, 479 miles are in operation and 341 miles are yet to be constructed, according to the programme which, under the terms of a concession granted by the Philippine Government, must be completed by the end of 1918. In the three years 1910-1912 183 miles of new road were opened to traffic, and the large proportion which that bears to the total length of line under operation at the end of 1912, nearly two-fifths, is strongly suggestive both of the progressive policy to which those who control the property have committed themselves and, in the light of the development of earnings, of the real progress which the railway has made, for the average net earnings per mile on the 283 miles of 1909 were £405, while on the 466 miles of 1912 they were £485, an improvement of nearly 20 per cent.

The large construction works in hand make the raising of further capital a necessity. Nevertheless it is not the intention of the board to make any further issue of bonds. The bonds which the security-holders are asked to authorize can be used as collateral security for temporary financing, and it is not an unreasonable supposition that as time goes on an improvement in the company's general credit and a fall in prevailing rates of interest will combine to raise the market price of the "A" and "B" Debentures and thus enable the board to issue, on more favourable terms than could be commanded at present, such amounts as

MALAYA

Federated Malay States Railways.—The following is from the *Malay Mail*:—The F. M. S. Railways reflect in striking manner the trade expansion of the country. The annual report for 1912, signed by the General Manager, Mr. P. A. Anthony, is published as a supplement to the *F. M. S. Government Gazette*, and if it shows an appreciable rise in working expenses this was to be expected, especially in view of the greater cost of materials and labour, which is one of the principal causes. This remarkable trade development, as Mr. Anthony remarks, continues, and critics of the Department should remember that the extra labour it entails upon the officials came in the train of troubles over which they have had no control. Congestion and delay were to a certain extent inevitable, much as they are to be deplored. The report at the outset emphasises the great importance of the past year in Railway development, for 1912 witnessed the inclusion under the F. M. S. Railways administration of the Johore State Railway and the Singapore Government Railway. The sum for the purchase of the latter was voted at the last meeting of the Federal Council, and the amount set aside for the Johore Railway approved by Council, who heard from the Chief Secretary, Sir Edward Brockman, that it is possible the further negotiations with the Johore Government may come to nothing. Be this as it may the year 1912 in every way added greatly to the responsibilities of the F. M. S. Railways administration.

The report mentions that the dividend earned on a capital of $59,444,038.84 was 4.56 per cent. after paying the rents of leased lines, "as compared with 6.03 per cent. Federated Malay States Railways only in 1911." One excellent result of increased business has been the reduction in fares and rates which it has enabled the Railways to allow. On the first class fare this reduction has been from six cents to five cents per mile, and on the second class from four cents to three. The past year also saw a big drop in parcel rates and the sum charged for the carriage of firewood. Then also, truck rates were introduced for constructional steel and iron work, corrugated iron, rubber cups in cases and crates, and wooden cases or chests in parts for making up into rubber chests. All classes of goods over long distances are now carried at a reduced figure.

The total mileage of lines open for traffic, including those leased on December 31st, 1912, was 734 miles, 15 chains, an increase of 175 miles, 13 chains. This includes the Semantan-Kuala Krau and Kuala Krau-Kuala Teh lines opened during the past year. The length of sidings with the increase provided in 1912 is given as 92 miles, 23 chains, with 826 miles, 38 chains of railroad now in operation. The capital account on the open lines amounted to $59,444,038.84 at the close of the year under review, representing an increase of $4,730,745.28 over 1911. In the total expenditure on account of special services on capital account during the year, $1,156,981.31, the largest sum is $210,948.40 for additional wharf accommodation, and $102,181.87 for a new timber tongkang wharf, at Port Swettenham. For the new Station and Hotel at Ipoh $125,248 was provided, and other necessary expenditure, the totals of which reach somewhat similar amounts, was upon additional passenger stock, locomotive, and goods vehicles.

It is interesting to note that the average capital cost per mile of line open to December 31st was $99,333.04, considerably higher than that at the end of 1911. A number of lines are still under construction, and will materially add to the length of railways operated. The capital account of these amounted to $5,283,227.54, an increase of close upon a million dollars. Much has been done in the direction of permanent and trial surveys. As a revenue earner the Railway continues to forge ahead, and the gross earnings from all sources, including motor services, amounted to $8,421,016.87 as compared with $7,718,239.75 in 1911, an increase of 9 per cent. The gross working expenses were heavy—$5,754,671.64, the increase being well over a million dollars. A sum of $527,073.88 appears in this connection under the heading of engineering. In 1912 the railways carried 11,589,273 passengers, an advance of 1,240,377.

There are many other figures of interest in the report, which, on the whole, considering the exceptional circumstances previously referred to, may be regarded as satisfactory.

MONGOLIA

Railway to Kiachta.—The Russians have commenced the construction of the Railway Line from Werchne-Udinsk to Kiachta.

MANCHURIA

South Manchuria Railway.—Y. 43,632 was the daily average of the S. M. R. traffic returns for the last decade of July. It denoted an increase of Y. 12,121 on the corresponding period of last year. The daily average for the whole month of July was Y. 44,187, being an increase by Y. 7,850 on the corresponding month of last year. Figuring since the beginning of last April, the aggregate receipts up to the end of July amounted to Y.6,528,269, which means an increase of Y. 1,461,716.

TRAMWYAS

Shanghai Tramways

The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of July, 1913, and for seven months ended July 31, 1913, with figures for corresponding periods last year.

	July, 1913.	July, 1912.
Effective Receipts	$86,676.91	$68,758.03
Passengers carried	4,552,571	3,580,909
Car Miles run	262,808	240,511
Loss by depreciation of subsidiary coinage	24,666.24	21,628.97
Percentage of loss by depreciation of subsidiary coinage	23.24	25.42
	7 months ended July, 31, 1913.	7 months ended July 31, 1912.
Effective Receipts	$510,091.87	$449,438.58
Passengers carried	25,897,237	22,769,485
Car miles run	1,619,119	1,593,133
Loss by depreciation of subsidiary coinage	141,048.89	139,335.79
Percentage of loss by depreciation of subsidiary coinage	22.94	25.23

Week ended July 23, 1913:—

	1913.	1912.
	$	$
Effective receipts (after deducting loss on subsidiary coinage)	17,998.73	15,065.80
Passengers carried	958,032	789,071
Car miles run	55.579	54,647

The loss by depreciation of subsidiary coinage for the week was equal to 23.58 per cent. of the gross cash collected on the cars, as compared with 25.36 per cent. for the corresponding week last year.

Week ended July 30, 1913:—

	1913.	1912.
	$	$
Effective receipts (after deducting loss on subsidiary coinage)	24,187.06	15,782.80
Passengers carried	1,248,331	805,007
Car miles run	36,810	54,085

The loss by depreciation of subsidiary coinage for the week was $6,976, equal to 23.29 per cent. of the gross cash collected on the cars as compared with $4,786, equal to 24.70 per cent. for the corresponding week last year.

[During the week ended July 30 the passengers carried on the International Settlement tramways totalled 1, 248,331,—a record figure. Practically 3,000,000 coins, weighing about twenty-two tons, were collected].

Week ended August 6, 1913:—

	1913.	1912.
	$	$
Effective receipts (after deducting loss on subsidiary coinage)	20,208.15	16,008.76
Passengers carried	1,062,236	828,376
Car miles run	50,885	54,878

The loss by depreciation of subsidiary coinage for the week was $5,917.75, equal to 23.66 per cent. of the gross cash collected on the cars as compared with $4,843.66, equal to 24.54 per cent. for the corresponding week last year.

The Nantao (Shanghai) Tramway.—The Nantao Tramway began operations early in August.

FINANCIAL

Hongkong and Shanghai Banking Corporation.—The 96th half-yearly meeting of this Bank was held at Hongkong on August 16, Mr. S. H. Dodwell presiding.

The Chairman said: Gentlemen,—The report and statement of accounts having been in your hands for some time, I shall, with your permission, take them as read. I think you will agree that another very satisfactory result is added to the records of the Bank, and I trust you will approve of the proposed division of profits, which is practically the same as the distribution made at this time last year, viz.:—

A dividend of £2 per share.

$250,000 added to the silver reserve fund.

$250,000 written off Bank premises account.

The balance remaining to be carried forward to the current half-year amounts to $2,052,482.91, being some $41,000 more than was brought in from the previous account. You will see from the report that a part of our earnings has again been diverted to writing down sterling reserve fund investments. The great demands on capital of late and consequent high rates of interest obtainable have caused a further decline in all first class securities, making it necessary to readjust our book values below the point which, last year, we had hoped would prove low water mark.

Our holding of £1,200,000 Consols has been written down from £900,000 to £864,000 and now stands in the books at 72, and other sterling securities from £334,950 to £329,100; to effect these adjustments and maintain the fund at £1,500,000 we purchased £45,000 3 per cent. exchequer bonds due 1930 at 97⅛, which have been placed in the books at 93. The net cost, viz., £43,918 11s. 11d. at 1/11$^{9}/_{16}$—$447,340.60, was, as already mentioned, met out of the half-year's profits. Recent experience makes one somewhat diffident in venturing an opinion with regard to future values of even first securities: I shall therefore confine myself to the remark that our investments seem to be written down to very conservative figures.

I may mention that the same remark also applies to investments outside the sterling reserve fund, appearing in the accounts under heading of "Indian Government Rupee Paper," and "Colonial and other securities." Apart from the sterling reserve fund, there are few changes of outstanding interest in the figures of the balance sheet. The total of current accounts and fixed deposits in gold is £9,300,000 against £10 millions on December 31 last and £9¾ millions on June 30, 1912, and

of the chamber will extend a corridor fifteen feet in width, decorated with columns, whence communication will be secured with the Senate on the right and the House of Representatives on the left.

A special front entrance to each House will be provided, which is indicated on the illustration by the small porticos to the left and right of the main entrance. Each Chamber will be 85 feet in length by 70 feet in depth, and may be reached by way of special entrance hall, equipped with stairways and lifts. The architect has so designed these sections of the building that members of parliament, and officials, will have absolute immunity from public interference. From the main entrance hall a broad stairway will lead to the first floor and corridor round the Chambers. Three doorways on each side of this hall will give access to members, while officials will have private entrances at each end of the building. The public may only enter the gallery of the Chamber by taking a stairway or lift which will be specially provided in the basement. Near each Chamber rooms will be provided for the President of the House and the staff, while seven rooms will also be arranged near each Chamber for Ministers and high officials, with private entrances to the Chambers.

A hall 36 feet wide and 66 feet long will extend from one Chamber to the other, which will also give access to the refreshment rooms, lavatories, etc.

Each Chamber will be provided with semi-circular seating accommodation, the Senate facing the North and the House of Representatives the South. The furniture for these legislative halls will be of most modern description and in keeping with the general decorative style adopted throughout.

The second floor will provide entrance to the galleries of the Chambers, press rooms, waiting rooms, refreshment room for strangers and lavatories. A feature of the press rooms will be the special telephone and telegraphic installations.

On the third floor Committee and party rooms providing considerable accommodation will be arranged, while at the rear of the central dome the library will be established, with reading and writing rooms on each side for the members of the two Houses. The members' telephone and telegraph rooms will also be provided on this floor at convenient places.

The staff of attendants will be accommodated in the attic rooms.

Altogether there will be 28 staircases, most of them leading from the basement up to the various floors through the walls. These have been so contrived as to prevent confusion, and will assure the utmost possible privacy for members and officials. The stairways for the public will lead to nowhere but those places in the Houses where the public will be admitted.

Special attention will be given to the installation of lighting and heating plants; the latter will be so arranged as to permit of sections of the building being heated either by hot air or water without a waste of heat in unoccupied portions.

Dr. S. Hirai, Chief Adviser to the Chinese Board of Communications

The most up-to-date sanitary equipment will also be provided, and the kitchens, in the basement, will be equipped with the best available cooking arrangements. All pantries will be connected by special food lifts running to the refreshment rooms and upper floor.

The foundations of the building will be of concrete twelve feet in depth, and the same material, reinforced, will be used throughout the building, especially in the roof and cupolas. The basement will be of granite, obtainable at the western hills, whence will also come whatever sandstone or marble that is used.

The design of the building has been made by Dr. C. Rothkegel, who was assisted by eight European and five Chinese architects and draughtsmen in working up the innumerable plans. The minutest care has been taken to obtain a final assemblage of material without miscalculation, and the work devoted to this important part of the scheme has been painstaking and tedious, reflecting the highest credit upon the architect and those assisting him. Details for every portion of the great building have been prepared, and the architect awaits nothing but the money to commence work and carry it on to speedy conclusion.

CHIEF RAILWAY ADVISER TO CHINA

In regard to Dr. Seijiro Hirai, Railway Technical Adviser to China, the special commissioner in the East of *The Engineer* wrote at the time of Dr. Hirai's appointment as follows:—

Dr. Hirai was born in 1855. He was sent by the Japan Government to study engineering at Troy, U.S.A., in 1875, and there obtained his engineering degree. He returned to Japan in 1880 and filled the position of chief engineer to the Tanko Railway till 1894, when he became attached to the Imperial Government Railways. He steadily rose to the position of President of the Imperial Railways; this was before the creation of the Railway Board. On the creation of the Board he became Vice-President, which position he filled till quite recently.

When I was in China there was a great deal of speculation about this position, as it was well known that the government contemplated such an appointment. No one, however, had any idea that anyone outside the present circle of Chinese railwaymen would be selected, and it will come as a surprise that a Japanese engineer has been appointed.

Of Dr. Hirai's experience and ability as an engineer there can be no doubt. He is held in the highest respect by the officials and men of the Japanese Railways, and that his country honours him is proved by the fact that he is one of the non-hereditary members of the house of peers. He has a personal charm which cannot fail to make him popular.

Nationality counts for a great deal among foreigners in China. Personally, I confess that I am sorry a Briton was not selected for this position, and others will doubtless be sorry that a Frenchman or a German or an American did not receive the appointment. The one thing that should unite railwaymen to support Dr. Hirai is that he is by ability, training, and experience an engineer worthy of the position.

Dr. Hirai will be well advised if he declines to join in the insane movement to rid the Chinese Railways of their best friends, the foreign engineer and manager. The experience of his own country in this matter should make him careful, for, but for the undue haste in filling responsible positions with Japanese subjects—experienced and able or otherwise, it little matters—Japan would to-day have been supporting a large industrial community as the result of the investment of foreign capital.

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STARVING CHINA'S RAILWAYS

The optimists in China in 1911-12 had some excuse for believing that the change of government consequent upon the overthrow of the Manchu *régime* would mean a change for the general betterment of the country—a change which would signalize remarkable industrial development, and which would give a long awaited and sorely needed fillip to railway expansion. For some reason or other it was generally believed by foreigners that reform in this direction would be spontaneous and immediate. It has not been. So far even the Government has not assumed definite shape. Politics have played so important a part with the various Boards that progress has been compelled to take a back seat, and declarations of the leaders of the new order that China would forthwith leap into a bold forward movement; would clamor for and welcome foreign assistance and advice; and would widen the avenues for foreign trade and intercourse, have been given the lie almost before the echoes have had time to die down in the distance. This may or may not be intentional. We will join the charitable in attributing the shelving of the good intentions to the desire of patriots for the prior establishment of a good central government, but in doing that we are, to a certain extent, compelled to stand with the jeremiahs and wonder when that desideratum is ever likely to materialise if party feelings and prejudices are much longer to be permitted the pernicious play that has been so far vouchsafed them. Both the Government and the opposition parties are to blame for the deplorable stultification of post-revolution promises and the unhappy conversion of enthusiastic optimists into the most plaintive of pessimists.

The well-wishers of China were particularly optimistic about the future of railways. They felt that they had grounds for legitimate belief that the Government under President Yuan Shih-kai would insist upon a strong forward policy being adopted and followed, but the President has had other things to attend to than the welfare of existing railways, and the Board of Communications has not yet managed to pull itself together to face expenditure for adequate maintenance of lines in operation and the replenishment of depleted equipment, much less the making of a display of enterprise in other directions. The Board has in fact been the milch cow of all other Boards. It is the one earning department in the governmental scheme of things, and the proceeds which do come to its coffers from the various railways are not permitted to remain out of circulation for any length of time. They are quickly requisitioned for general administrative purposes, with the result that the Board is deprived of all chance of benefiting the lines out of earnings, as should be done, and is provided with an excuse behind which to hide from the clamors of those who are constantly crying for more rolling stock to deal with the transport of the increasing quantity of cargo that is being offered. Every line in operation in China is underequipped, and the lack of transportation facilities is causing a serious loss to the revenues of the State. On the short line from the Kailan mines an augmentation of traffic by some two thousand tons a day could be made if there were sufficient wagons to carry the coal. On the Peking-Mukden line, on the Tientsin-Pukow line, on the Shanghai-Nanking line, on the Peking-Hankow line, and on others, there is a constant cry for more and more cars, carriages, and locomotives, and ever the cries fall upon deaf ears. The voices are as those which rise unheard in the wilderness. The Tongshan works is making as big an effort as possible to supply some new cars, but that will meet but a limited need. What is required is the quick importation of a quantity of up-to-date equipment, and that should be arranged for by the Board of Communications immediately and without waiting for current earnings to be available to defray the expense. The development of the dormant trade will in itself pay for the additional means to secure the profits. That is a thing which the authorities in the Board do not seem to realise.

No better illustration of the increase in the value of railroads can be given than those of America and Australia, where virgin country is opened up for settlement. In China all available land is under the plough. No matter in which direction the traveller might pursue his way, nor for what distance, he will begin his days and end them in cultivated areas. The crops and the settlers are always awaiting the railway, and in this peculiar respect China is infinitely better off than those countries which have to depend upon the railway to open up settlements. Despite that, the Chinese hesitate thoroughly to equip the railways they have for the services they are designed to render. As an inspiration those responsible for reluctancy in responding to the requests of the various railway managements for increased rolling stock should study the trend of railway affairs in the state of New South Wales. There is a country possessing not a tithe of the population which China boasts. In fact New South Wales claims something about 1,700,000 peoples only, as against China's 400,000,000, or against the least populated province, distant Kansu, which has 5,000,000 inhabitants. Yet what is the record of New South Wales in railways? During the six years ended June, 1907, the total number of passengers carried was 211,000,000. In the six years ended June, 1913, the total was 363,600,000, an increase of 152,000,000, or 72

per cent. The tonnage of goods and live stock in the first period was 16,000,000 tons, during the second period 24,000,000, an increase of 50 per cent. These figures, put into money, showed increases as follow:—Passenger earnings (Mexican currency), 890,000,000 to $140,500,000, an increase of 58 per cent. notwithstanding a considerable rise in fares; goods and live stock, $120,000,000 to $170,500,000, an increase of 45 per cent. The total earnings on all classes of goods was from $230,000,000 to $340,700,000, an increase of 50 per cent. During the whole six years in nearly every department there had been continuous expansion, but efforts were as continually made to meet it. On June 30, 1907, the number of locomotives was 656; in 1913 it had increased to 998, an advance of 52 per cent., not counting duplicate stock. That increase, however, does not indicate the true position, since additions had been made to the power of the engines. The total tractive power in 1907 was 13,000,000 lbs.; in 1913 it was 21,500,000 lbs, an increase of 65 per cent. The tractive power per engine had gone up from nearly 20,000 lbs. to over 21,000 lbs., an increase of 9 per cent. In the same period vehicles showed an increase from 12,700 to 19,000, or 51 per cent. The carrying capacity had increased from 111,452 tons to 213,311 tons, an increase of 91 per cent. The total expenditure in 1913 in connection with rolling stock alone, was $9,070,000. These figures show what can be done with a small population such as New South Wales possesses and which, it must be mentioned, is mostly concentrated in large cities. What then can be done in China with its vast industrious agricultural population already established on productive land? Give China the railways, and give the railways adequate rolling stock, and the state revenues would rise by leaps and bounds. Keep the railways starved, as they are at present, and the result cannot be otherwise than disappointing to those who know how to manage railways and who can see the vast losses being suffered by China simply on account of lack of appreciation of the value of the great transportation service which might easily be developed. There is surely call for decided activity on the part of the Board, and now that a new Cabinet has been created the least that can be expected is that the sweep of the new broom will be felt in those places where it is needed.

THE TIBETAN CONFERENCE

On September 12 the Chinese Commissioner for the settlement of the Tibetan question, Mr Ivan Chen, left Shanghai for Simla to take part in a conference in which representatives of the British and Indian Governments and of Tibet will participate. The conference, which will meet in October, will be attended by Mr. Ivan Chen on behalf of China; Sir Henry M'Mahon (Indian Frontier Secretary); Mr. Bell (I. C. S.) and Mr. A. Rose (Foreign Office) and Longchen Shatra (Tibetan Prime Minister).

The importance of this conference will be readily recognised. The question of China's suzerainty over Tibet will, it is to be expected, be settled once and for all. In the Anglo-Chinese Convention of 1906 that suzerainty was practically admitted and Great Britain engaged not to annex Tibetan territory nor to interfere in the administration of Tibet. The following year Great Britain and Russia signed an "arrangement" which specifically recognised the suzerain rights of China in Tibet. The signatory Powers engaged to respect the territorial integrity of Tibet and to abstain from all interference in its internal administration. These two instruments restored international recognition of China's suzerainty, which had been ignored when direct relations were established between Great Britain and Tibet in 1904, when the Younghusband Convention was signed.

China, however, is apparently not content with the acknowledgment of her suzerainty, but wishes to establish her sovereignty. When the Revolution broke out in 1911 the Warden of the Marches, Chao Erh-sen, had practically restored China's authority and prestige in Tibet. The revolution in China was attended by a revolt in Tibet, and the Tibetans succeeded in expelling the Chinese Amban and his guards from Lhassa. Desultory fighting has been carried on in the Marches for the past two years, but the Chinese have not succeeded in making much headway.

The Republican Government can hardly be congratulated upon its diplomatic management of the Tibetan Question. A British Note was presented to China on August 17, 1912, by Sir John Jordan, H. B. M. Minister at Peking. This was a protest against the assumption of all administrative power in Tibet by the Chinese officials in that country, and demanded that an agreement should be concluded defining and restricting the powers of China in Tibet. The conclusion of such an agreement was a condition precedent to Great Britain's recognition of the Republic of China. No reply was made by China to this Note until December 23, 1912, when it was claimed that China had kept within her treaty rights and that there was no need to negotiate a new Treaty on the subject. The text of this correspondence was published in the FAR EASTERN REVIEW of January, 1913.

It became evident that satisfactory results could hardly be expected from negotiations in Peking, and proposals were made for a conference either in London or in Simla Eventually it was decided to hold a tripartite conference at Simla, and Mr. Ivan Chen and Mr. Hu Han-ming, ex-Tutuh of Kwangtung, were appointed Commissioners for China. Political developments rendered it impossible for Mr. Hu Han-ming to accept the post, and Mr. Ivan Chen is now the sole Commissioner. To the difficult and not improbably thankless task before him he takes many of the qualities which would ensure success if success were possible. He may be depended upon to do much towards rendering possible a lasting adjustment of this, one of the most important of the external problems confronting the Republic of China.

CHINA'S FOREIGN ADVISERS.

China has so far managed to accumulate a presentable selection of foreign advisers. Men representing several countries have been engaged, and are drawing handsome salaries, but in return therefor are permitted to do little or nothing to bestow upon the nation the benefits of their learning or experience. Their efforts are apparently to be confined to the exertion requisite once a month in signing a receipt for their pay. China does not expect them to do what they would be pleased to call their duty. Therefore the observer is justified in concluding that they have been engaged merely to please the foreign nations, and to be dummies in make-believe reform. Were there genuine reform all these men would be "sweated," so great a demand would there be for their services. Even in the case of the Salt Gabelle, which the Government promised to reform in order to provide the security for the Reorganisation Loan, there has been startling and unexpected obstruction. Sir Richard Dane, who started out with the determination to put the Gabelle upon a profitable basis, met resistance at every turn. He was quickly shown by the Peking officials that his presence in China would be better appreciated were he to confine his attention to viewing the sights which other people travel so many miles at their own expense to see. Sir Richard made no headway, and when the deadlock arrived he was compelled to submit his case to the Ministers of the nations concerned in the loan. They deliberated and decided to take the strongest measures to impress upon the Government the fact that the Reorganisation Loan was made to China for reorganisation purposes, and that some evidence of sincerity in this regard would have soon to be given by the Government.

This revelation would seem to suggest that the Government obtained the £25,000,000 upon false pretences, and even the strongest supporters of the present *régime* find it exceedingly difficult to excuse the unpardonable neglect of the Government voluntarily to apply all the talent available to place the Salt Gabelle and other departments, upon a proper footing. Instead of that the officials actively resist progress. Were that the case in the provinces some excuse could be made on the grounds of misunderstanding of motives, but when the obstruction is carried on in Peking by officials under the thumb of the President it is difficult to understand.

Well-wishers of China were led to believe that there would be an era of progress under the present governing body, but the exhibition of the array of advisers being confined to attending to their own personal affairs is gradually compelling them to believe that they have discovered a reactionary movement where they expected to find a progressive one. Dr. Morrison is perhaps the only continuously busy man. His services are constantly employed. The others are left to their own devices, and spend most of their time in the occupation which made the great Micawber famous. China shows not the least indication of profiting by the experience of Japan, and seems to be content to follow the unprogressive and unprofitable course set by the generations of the years ago. The march of civilisation and the call of the world affect her not. It is lamentable to realise that she seems destined to drift to the point where foreign nations will, for their own protection, be compelled to take charge of the most important of her services. The men now engaged by her at salaries in the vicinity of £3,000 to £4,000 per year, and who could, if utilised, help her on the highway to prosperity, are as follow:

Political Adviser to the President.
Dr. G. E. Morrison (British).
Military Adviser to the President.
Lieutenant Colonel Brissaud-Desmaillets (French).
Advisers for Drafting the Constitution.
Professor Frank Johnson Goodnow (American.)
Professor Ariga (Japanese).
Ministry of War.
Major von Dinkelmann (German).
Colonel Banzai (Japanese).
Captain Borrey (French).
Ministry of Finance.
Dr. G. Vissering (Dutch), Honorary.
Dr. Arnhold (German).
G. Passeri (Italian).
Ministry of Communications.
G. Baur (German), Technical.
G. Charignon (French), Railways.
Dr. Hirai (Japanese), Railways.
Ministry of Foreign Affairs.
A. H. Eriksen (Dane),-Telegraphs.
S. Larsen (Dane), Wireless Telegraphy.
H. De Codt (Belgian), Legal Adviser.
(An appointment has been offered in this Department to Baron Guido Vitale, Italian).
In Connection with the Quintuple Loan.
Sir Richard Dane (British), Salt.
Herr von Strauch (German), Assistant Salt.
N. Konovaloff (Russian), Audit.
H. Mazot (French), Acting Audit.
H. Pfeiffer (German), Loans.
Ministry of Interior. Mongolian Affairs.
F. A. Larson (Swede).
Police Administration
Colonel C. D. Bruce (British).

RAILWAYS, ROADS AND REBELS.

With the practical suppression of the rebellion the difficulties of the Government are still far from having reached the disappearing point. The bands of erstwhile soldiers, who retained their arms when the more or less organised rebel forces were broken up, remain as an unwelcome legacy. Also those who surrendered and were paid off cannot at once become merged in the industrial life of the country. Furthermore China has upon her hands a considerably greater number of troops than are necessary. In the present economic condition of the country the existence of an unduly great proportion of troops is not only a political menace, but is a brake upon the industrial development of the Republic.

Any scheme of disbandment on a large scale without making due provision for the employment of the men whose military services had been dispensed with, would be inviting further trouble. It is beyond dispute that men who have been engaged in military operations, especially those who leave peaceful avocations to take up arms, find it extremely difficult again to settle down to lawful pursuits. Especially is this so in China, where pillage is recognised as an inevitable concomitant of civil strife. Men whose minds have been inflamed by hopes, occasionally realized, of rich plunder could hardly be expected easily to resume the drab and hopeless existence of the Chinese of the lower classes. They have learnt that the ability to carry and fire a gun can secure for them food, clothing and a small stipend, with the additional prospect of achieving comparative wealth should they participate in the sack of a wealthy city. In view of the deadly monotony and the precarious reward for labour that attend the life of the Chinese coolie, it is scarcely surprising to find him disinclined to relinquish his rifle and revert to his hoe, his wheelbarrow or his ricksha. In the unsettled political condition of the country ample opportunity is offered him to join robber bands who levy tribute on the peaceable commercial and agricultural classes.

The method by which these bands of marauders should be eradicated does not fall within the scope of this article. The object in writing is to suggest a means by which, at all events, an augmentation of their number might be prevented An application of the *corvée* system would go far towards settling some of China's political and economic problems. The country is in a state of arrested development, and there are innumerable public works which, if taken in hand, would add vastly to the national wealth. What China has been able to do under the *corvée* system is attested by the Great Wall, one of the most remarkable human achievements in existence. If the workless element in China could be formed into a disciplined industrial army under strict supervision the return would be out of all proportion to the expenditure involved. China's communications are woefully inadequate; she requires railways, roads and efficient canals. Her mineral resources demand exploitation. Her bare hill-sides call for afforestation. There is work here that would keep millions busy for many years to come, and much of the work would be almost immediately productive. If instead of paying off rebel soldiers they were enlisted in a great industrial army they would become a source of profit instead of loss to the country. Similarly those of the loyal troops whose services are no longer required could be dealt with in this manner with advantage to themselves and to the nation. To turn them loose with a few dollars speedily to join the ranks of the workless and probably of the bandits, is obviously a short-sighted method of dealing with the problem.

The organisation of such an industrial army would be difficult, but certainly not impossible. These men have been accustomed to discipline of a sort, and it should not prove to be beyond the power of the authorities to divert their labour from an unproductive to a productive channel. China is suffering from a plethora of "Generals;" should they be turned into Captains of Industry and their followers into industrial soldiers, peace and prosperity would the sooner be the portion of the Republic of China.

THE MONTH IN CHINA

Politics and not business continued to engross attention in China during September. The capture of Nanking by Chang Hsun, while it practically put a period to the rebellion, brought the Government face to face with several serious problems. The city was looted and the populace subjected to outrage at the hands of the Government troops. Moreover three Japanese subjects were killed and the Japanese flag fired upon. This caused great excitement in Japan where popular meetings were held at which it was demanded that strong measures should be taken against China. The Japanese Government contented itself with demanding an apology and compensation for the families of the men who were killed. The opportunity was taken at the same time to demand an apology for outrages committed upon Japanese at Hankow and elsewhere. Although the Japanese demands were admitted to be moderate, a stipulation that Chang Hsun should personally apologise to the Japanese Consul at Nanking and that his troops should perform an expiatory march past the Consulate was, it was thought, likely to give trouble. China, however, promptly accepted the demands, and although no less than ten Japanese men-of-war were assembled off Nanking, there was towards the end of the month a reasonable prospect of matters being satisfactorily adjusted. A complication has been caused by an affray between Chinese police and Japanese soldiers at Changli in Manchuria, in which five of the former were killed. A joint committee of Chinese and Japanese officials is investigating this affair.

The most important domestic event was the completion of Mr. Hsiung Hsi-ling's Cabinet and its acceptance by the Parliament. Reference to the new Cabinet will be found elsewhere. Parliament continued its sittings and decided that the Presidential election was to take place early in October.

FAR EASTERN RAILWAYS

CHINA

Peking-Hankow Railway.—The following is a comparative statement of the receipts of this railway for the first seven months of the year:—

January	$ 557,781.50	$1,473,813.69
February	331,076.33	685,260.16
March	970,082.21	1,342,299.53
April	1,266,818.78	1,249,222.55
May	1,329,740.03	1,587,388.78
June	912,640.68	1,221,372.44
July	820,761.86	1,127,515.10

Hai-Lan Railway.—The Hai-lan Railway office at Kaifeng has started buying land for the line, says the *Peking Daily News*, and continues: But for various reasons, there are frequent frictions between the railway authorities and the villagers. In measuring the land, the custom has been to use the bamboo tape, which is less liable to expansion or contraction. but it is said that the railway authorities are using the flax tape, and the land-owners are complaining that the measurements are unfairly made.

The Hukuang Railways.—So many circumstances in connection with the Hukuang Loan for the construction of the railroads from Hankow to Canton and Szechuan were changed by the Revolution and the subsequent failure of the Government to secure a permanent Director-General for the lines, that the Banks interested in the loan were compelled to come to special arrangements with the Chinese Government to provide for the protection of bondholders.

To this end a special conference was recently held in Peking between the chief engineers and accountants of the lines and the Banks, and regulations were drawn up and agreed to by the Ministry of Posts and Communications for the proper transference and disbursement of loan funds. These regulations will ensure the loan monies being devoted solely to the construction of the railways, and will secure for the Chinese a line of the most economic and efficient kind. The regulations are to provide against waste and misappropriation, and the Board of Posts and Communications will surely be pleased to see something being done to this end.

Work is now being pushed ahead on both the southern and western lines, and within a few months distinct progress should be noticeable.

The *Central China Post* of September 5 reports:—The first mile of line has been completed in the Hankow-Canton Railway, Construction work was commenced on August 1, but general work is waiting the discussion now going on in Peking between the Four Powers' banks, the Board of Communications, Mr. Collinson, Engineer-in-chief of the British section, and Linow of the German section. The recent troubles have in some way been the cause of the present delay in remitting the money and the present conference is to contend with conditions that have arisen. The last conference was to have taken place yesterday and prospects are bright that a favourable arrangement will be arrived at. The first piece of construction in this centre is taking place near the glass factory above Wuchang. This is only a branch line to a market on the river. Only about two hundred coolies are at present being employed. The main line will run behind Wuchang to the terminus proper on the river bank on the Wuchang side opposite the German Concession. Here will be the necessary sheds and offices. The position of the terminus was chosen so as to connect the Canton line with the Kin-han railway at Kilometre Ten, connection being made by ferry. There will be placed a specially planned pontoon on the Wuchang side. This will be fitted with a crane and will also be connected by rail with the shore, so that rolling stock will be able to be transported across the river and run on to the Canton line. The purchase of land is proceeding but is hampered by a boom in the land market which occasions the land owners to value their land at prohibitive prices. Notwithstanding, speed is being made in the erection of the telegraph lines along the route so that there will be ready communication between the different construction centres when work starts. It is expected that the line to the Canton border will be completed in four years and, the Canton province section having been completed by the same time, the journey to Canton will be made in thirty-six hours.

[The conference proved successful, and the engineers have returned to their sections. Mr. Frank Beckwith has gone over the whole of the American section and has located the route. An early start on construction is anticipated. Mr. Beckwith subsequently resigned his post.—Ed. F. E. R.]

Yunnan Railway Project.—The *Hongkong Daily Press* of August 25 says:—We learn that at the end of July, a German firm offered the Provincial Government of Yunnan a loan of £3,000,000 to build the Poseh-Ting railway. The issue price was fixed at 95 and interest required at 5½ per cent. per annum. The agreement contained 22 clauses and, among the stipulations were the following:—

(1.)—That principal should be used, without deductions of any kind, to build the Yunnan-fu-Poseh railway.

(2.)—The actual route of the railway to be decided by the lenders of the money, but in the event of objection by the people to the location proposed, then the route shall be changed.

(3.)—That the Goverment of Yunnan in the event of their requiring mining machinery, arms, ammunition, munitions or material for war, arsenal machinery, railway machinery, industrial plant or any foreign material or supplies whatsoever, shall give the first refusal of such contract to the lenders, and if the price quoted by them, for such plant, be equal to or lower than other bids, quality being equal, they shall be awarded the contract during the term the loan contract endures.

(4.)—That the lenders of the capital shall have the right to work such mining areas along the line of the railway route, or within a distance to be determined later, provided that such areas are not worked now by native owners or workers.

(5.)—The railway shall belong to the lenders of the capital until the final instalment in repayment of the loan is paid.

"Should such a contract go through," our informant says, "it will destroy all active competition in the province—undoubtedly the richest mining province in China."

Taonanfu-Sinminfu Railway.—The Government projected the Taonanfu-Sinminfu Military Railway some months ago and proposed to construct it at once, in order to facilitate the transportation of troops and supplies to the Mongolian frontier, but the matter was put off for lack of funds. It is said that an appropriation has now been made for this railway, and the work on this line will be commenced very soon. This railway will pass throngh Changtufu.—*Peking Daily News.*

The Lotung Railway.—When the Government declared that the Lotung Railway should be state-owned, the gentry and commercial people of Honan made violent protests, says the *Peking Daily News.* But since Liu Ko, Manager of the Lotung Railway came to Peking, negotiations have been progressing smoothly, and it has been decided that the first step to be taken is to try and buy up the shares, thereby testing the attitude of the people. Now the Kaifeng Branch of the Bank of Communications reported that over $900,000 worth of shares had been bought up by the Government, and as the total capital of the said line being $1,300,000, the sum represented by this purchase made by the Government was far in excess of 50% of the total capital. This fact indicates the willingness of the people to hand over the control of this line to the Goverument. The Ministry of Communications has sent Secretary Chen Yuan-sun, and Mr. Chang-ho, to audit the accounts of the Lotung Railway Company. This railway has now been duly taken over. Mr. Orphanides, accompanied by Hsu Wen-chung, Engineer of the line, have duly taken over all the construction works of the line. On August 19th, the Lotung Railway was officially put under the control of Mr. Sze Shao-tsen, Director-General of the Lung-Tsin-U-Hai Railway.

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended August 16 are issued by the Shanghai-Nanking Railway:—

For the week

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	22,142	4,819	26,961
1912....	35,900	12,174	48,074
Increase.	—	—	—
Decrease	13,758	7,355	21,133

For thirty-two weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,488,439	329,688	1,818,127
1912....	1,456,434	235,119	1,691,553
Increase.	32,005	94,569	126,574
Decrease	—	—	—

Woosung Line traffic resumed on morning of August 14. Main Line traffic was closed for one day, the 14th instant, between Changchow and Tanyang. Instructions were issued to open up to Chinkiang on the 16th instant, orders were cancelled, however, before being put into operation.

Week ended August 23.

For the week.

Year.	Passengers.	Goods and Sundries	Total for the week.
	†23-8-13.	†23-8-13.	†23-8-13.
	$	$	$
1913....	24,762	4,642	29,404
1912....	36,122	9,859	45,981
Increase.	—	—	—
Decrease	11,360	5,217	16,577

For thirty-three weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,513,201	334,330	1,847,531
1912....	1,492,556	244,978	1,737,534
Increase	20,645	89,352	109,997
Decrease	—	—	—

†On average of 145 miles open.
Traffic opened for one day only (19th) to Chinkiang.

Week ended August 30.

Year.	For the week Passengers.	Goods and Sundries.	Total for the week.
	†30-8-13.	†30-8-13.	†30-8-13.
	$	$	$
1913....	29,008	6,424	35,432
1912....	35,465	7,134	42,599
Increase.	—	—	—
Decrease	6,457	710	7,167

Year.	For thirty-four weeks. Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,542,209	340,754	1,882,963
1912....	1,528,021	252,112	1,780,133
Increase.	14,188	88,642	102,830
Decrease	—	—	—

†On 161 miles open.
Trains running to Chinkiang from 24th.

Week ended September 6.

Year.	For the week. Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	†32,954	†6,937	†39,891
1912....	41,067	9,599	50,666
Increase.	—	—	—
Decrease	8,113	2,662	10,775

Year.	For thirty-five weeks. Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,575,163	347,691	1,922,854
1912....	1,569,088	261,711	1,830,799
Increase.	6,075	85,980	92,055
Decrease	—	—	—

†On 161 miles open.
As only one train ran to Nanking on the 6th, it has been disregarded in estimating the mileage open. There was no train from Nanking.

Week ended September 13

Year.	For the week. Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	58,322	6,704	65,026
1912....	38,309	9,432	47,741
Increase.	20,013	—	17,285
Decrease	—	2,728	—

Year.	For thirty-six weeks. Passengers.	Goods and Sundries.	Total
	$	$	$
1913....	1,633,485	354,895	1,987,880
1912....	1,607,307	271,143	1,878,540
Increase.	26,088	83,252	109,340
Decrease	—	—	—

JAPAN

Joto Light Railway Company.—The Joto Electric Railway Company, promoted by Count Hirosawa Kinjiro and Messrs. Satake Sakutaro, Mochizuki Unai, and Hoshino Seki, held its first general meeting on August 20 at the Tokyo Chamber of Commerce, the shares having all been taken up. The proposal is to lay a main line connecting Yanagishima, Hoiyo and Urayasu, Chiba Prefecture, and a branch line to Matsudo, Chiba prefecture. The total length of the railway will be eighteen miles, and the capital of the company one million *yen*. Count Hirosawa, the Chairman of the organization committee, was in the chair, and made a detailed report on the proceedings of the organization of the company. After the estimates of the company and the organizing expenditure to the amount of 9,000 *yen* had been approved a few amendments in the articles of association were passed.

Revenue Returns.—The returns of State railways for the month of July were 8,802,312 yen, being an increase of 800,529 yen on the figures for the corresponding period last year. The total returns since April up to the end of July are 37,414,504 yen, with an increase of 1,672,545 yen as compared with the corresponding period of last year.

New Lines.—As a result of the administrative readjustment the construction of new railway lines has for the most part been postponed, but the following fourteen lines being too important to put off are now under construction. They will, according to the authorities, be completed within the next year or so:—

Line	Section	Mileage	Date of expected completion
	Heavy Railways		
Shinjo....	Kiyokawa to Sakata	16.57	Dec. 1914
Ganetsu...	Nozawa to Tsugawa	19.14	Sept. 1914
Murakami.	Shibata to Chujo ..	8.08	April 1914
Murakami.	Chujo to Murakami..	12.50	Sept. 1914
Taira.....	Miharu to Shinmachi	20.66	March 1915
Hojo.....	Kisaradzu to Minato.	14.63	Jan. 1915
Hamada ..	Oda to Ota	10.61	Nov. 1914
Tadotsu ..	Kanonji to Kawamae	9.63	April 1914
Sarki.....	Oita to Kosaki ..	11.58	April 1914
	Light Railways		
Funakawa.	Mita to Wakimoto ..	5.54	June 1914
Nagai.....	Nashigo to Nagai ..	7.12	July 1914
Miyachi...	Kumamoto to Otsu..	13.75	April 1914
Miyachi...	Otsu to Shimano ..	10.68	March 1915
Oita.....	Oita to Nakahonda .	7.23	April 1914

Royal Cars.—The Imperial Japanese Railway authorities will construct special railway cars for their Majesties the Emperor and Empress and their attendants to be used on the occasion of the Coronation ceremony next year. The work of construction is to be commenced shortly at the Shimbashi railway works, and the necessary timber is now being prepared. The new cars are to be completed by about August next year.

Abolition of the First Class.—The Imperial Japanese Railway authorities have decided to abolish first-class cars on local services. According to the *Asahi* first-class cars were to be discontinued on trains between Yoshimatsu and Kagoshima, and both first and second class between Yoshimatsu and Tanigashira on the Kagoshima line, from the 16th August. The present system of running three-class trains in Japan was adopted from the English example. The Osaka journal considers the *car de luxe* unnecessary on the Japanese trains, which it describes as being no larger than a coffin, but it urges the improvement of the third-class service, a long journey in a third-class car being a severe ordeal. Our contemporary hopes the improvement of the third-class will go hand-in-hand with the abolition of the first.

Increase in Revenue.—According to Japanese papers, the revenue of the Government railways this year has been satisfactory. The total gross revenue for the four months ending July last amounted to Y37,391,850, comprising Y19,197,591 receipts from passenger traffic and Y18,104,259 from goods traffic, an increase of about Y1,000,000 on estimated revenue. If the present state of things is maintained, it is considered, there can be no doubt that an increase of over Y3,000,000 will be shown at the end of the financial year on March 31st.

Light Railway at Tokushima.—The Railway Board granted a charter dated September 1 to the Anan Railway Company for the construction of a light railway to connect Hanoura village with Hirashima village in Naga district, Tokushima prefecture. The length of the light railway will be 1 mile and 31 chains, with a gauge of 3 feet 6 inches. The cost of construction is estimated at 65,000 yen.

Konosu-Omama Railway.—The Bando Railway Company has been formed with a capital of Y1,000,000. The company proposes to lay a line between Konosu, Saitama Prefecture, and Omama, Tochigi Prefecture, with a total mileage of 29 miles, and another line connecting Konosu with Hachioji, 32 miles in length.

Moji Harbour Railway.—Rear-Admiral Takino and other prominent men are planning to start the Moji Harbor Construction Railway at an outlay of 2,000,000 yen. The promoters and supporters of the project will take 30,000 shares, and the remaining 10,000 shares will be offered to public subscription. The proposed railway will, it is expected, facilitate communications between Moji harbor and Sonezawa, thus aiding the business concerns to carry coal to Moji from the neighboring colliery.

Heavy and Light Lines.—As a result of the nationalization of the railways in Japan the expansion of the heavy railways under private management has come practically to an end, while the tramways and light railways have just commenced their expansion. According to the Government Railway Board the private heavy railway companies number ten with a total mileage of 391 miles. Of these seven lines, 253 miles in length, are already open to traffic, while two lines, 103 miles in length, are in course of construction. The building of the remaining lines, which will be 35 miles in length, has not yet been commenced. Light railways being easy to lay and being, moreover, heavily subsidized by the Government, have increased in number remarkably of late years. At present the light railway companies number 208 and the total length of the lines under their management is estimated at 3,328 miles. Of these 38 companies with lines 574 miles in length are already in operation, while 44 companies with a mileage of 800 miles are in course of construction. The remaining 126 companies with a projected mileage of 1,953 miles, are still in the stage of promotion. Besides these quite a large number of applications for the laying of new lines are receiving the attention of the Board. The expansion of the tramways keeps pace with the expansion of the commercial and industrial towns. There are at present 124 tramway companies operating lines 1,082 miles in length. Besides these there are fifty-eight companies which have not yet completed their lines. These will have a total length of 815 miles when completed.

Kokura Railway Co.—The general meeting of the Kokura Railway Company was held recently when Mr. Mudaguchi Gengaku, the president, presented from the chair the business report for the half year, and recommended a dividend of 5 per cent. to be declared. The meeting accepted the report and passed the proposal for the dividend. Mr. Sonoda Sanenori was nominated Adviser to the Company.

MANCHURIA

South Manchuria Railway.—The S. M. R. Traffic Returns for August give Y1,333,966 against Y991,990 for the corresponding month of last year. The aggregate returns since April reach Y7,868,519, being an increase by Y1,839,975.

SIAM

A Proposed Line.—A Bangkok journal makes brief mention of a proposed line of railway to connect with the Bangkok-Petchaburi line at Ban Pong, on the Meklong. If carried out it would no doubt do a great deal to open up a stretch of very fertile but sparsely populated country which possesses great possibilities. Ban Pong is some 111 miles from Bangkok and is quite a thriving place. The line would no doubt prove of great benefit in linking up lower Burma with Siam, and thence with the Federated Malay States and Straits Settlements.

The Northern Line.—In a letter from Chiengmai, dated the 24th July our (*Bangkok Times*) correspondent stated that work on the tunnel at Khoon Tan was proceeding satisfactorily. Enquiries made at the Royal Railway show that the top-heading on the Lampang side is 75 metres in, and the bottom 40 metres, and on the Chiengmai side 85 metres and 10 metres respectively. Work is not being pushed at all, and indeed would not be undertaken in this particular place were it not absolutely necessary. But by the time the rails are at Khoon Tan it is hoped the tunnel will be finished. But for that fact work would not be continued there, as the cost of the same is almost prohibitive. To give an instance, what is known as a big barrel of cement in Bangkok is equal to ten small barrels up-country, and each retails at one tical. The transport from railhead to the tunnel adds another Tcs. 2.25 on to each barrel. But still the cement is absolutely necessary, as at least part of the tunnel must be lined. The Laos labour at work here and elsewhere along the line varies of course according to the season of the year—naturally during planting time the supply is smaller, but the system of utilising Laos labour is not to be changed. Nearly two years' experience with these men has proved that they are cheaper than Chinese. Moreover the money they earn stays in the country. Some idea of the proportion of Chinese to local labour employed may be gained from the following figures. In the section from Den Chai to Lampang, under the charge of Mr. Altmann, the number of men employed during June was Lao 1,170, Chinese 200. On the further section, Lampang to Khoon Tan, a few hundred more men are working; the bulk are working in their own country.

The next stretch of line to be opened will be to a place called Pak Tar, where the Meh Tar stream joins the Meh Yom. It is situated some 30 kilometres from Den Chai and 563 from Bangkok. It is proposed to open this line on November 1st. This brings the railways to the banks of the Meh Yom which has to be bridged by three spans of fifty-eight metres each. During the last dry season the piers were placed in position, and in the coming dry season the iron superstructure will be erected. A good deal of material was carried over this river last dry season. A track was made across the river bed and much of the permanent way material for the line ahead moved. By this means it is hoped to reach Bang Pin next month with plate laying. This will be the next section to be opened, and may be in use as and from April 1st next.

Bang Pin is four kilometres away from Muang Long, and about an hour's walk. The latter place is the seat of the Amphur. Now in the rainy season a ferry service is being maintained across the Meh Yom to transport goods as required. Just beyond Muang Long the line reaches the foot of the hills. To avoid running round a somewhat lengthy spur of some eminence it was decided to have a short tunnel of some 140 metres. The top heading of this is already through and although the roof proves to be a hard slate it has been deemed advisable to line the roof, and this is now being done. The line here is really at the foot of the Bang Puei pass, and this involves heavy work. There will be no tunnel, but a big cutting has to be made. It is hoped to have the line running to Lampang by the end of 1915, and in any event it will be ready early in 1916. To Chiengmei, 756 kilometres from Bangkok, by train will be possible two years later. The work of preparing for the actual way of the line across the great rice plain leading from Lampoun to Chiengmai is being carried on.

One of the problems which the next few years will solve is whether the line will be utilised by the timber firms to transport timber. On this point it is difficult at the present time to pronounce definitely, but in railway circles the view is held that ultimately the railway will give a cheaper transport to Bangkok than by river. At present it is no unusual thing for logs to take some two or three years to reach Bangkok, and a writer in the *Times* last year gave it as five years from forest to mill. The capital locked up in this way must run into big figures.

Now that the line has reached the Meh Yom, in two days from there logs could be delivered into the Menam Chao Phya from the riverside station at Bangkok. For logs coming down the Meh Yom, Pak Pan and Pak Tar would both be good places for loading on rail. It is also quite possible that better places could be found hereabouts, as the line follows the river for some distance. Anyone who has seen the Meh Yom when jammed with logs and no water to float them, will agree that a case has been made out for a trial of transport by rail. It is said that logs cost nothing to float, but there are certain charges to be met, and whether a log is floated or carried on rail makes no difference to its condition—they are seasoned before being floated. Of course approaches would have to be made, and winches installed for loading, and before any definite arrangement could be come to the authorities would have to largely increase their present stock of timber drags. In Burma, we understand, the railways are more and more used for the conveyance of timber. The railway now being built will not open any new teak areas, but will provide an alternative to floating. That the changing conditions are being realised may be inferred from the fact that inquiries as to probable cost of transport by rail have been made. If the railway view is correct, Paknampoh as a riverine revenue station will have much less to do in the future than it has now. Millers would also be able to keep their mills running the year round, instead of having to shut down when a succession of short deliveries reduces stocks to too fine a point.

Paknam Railway Co.—At the forty-fourth ordinary general meeting of this company the following report was submitted:—Your Directors beg to submit to the shareholders the statement of accounts for the half-year ended 30th June, 1913.

Gross Receipts			Tcs. 94,381.78
Expenses			„ 25,534.76
Leaving a profit for the half-year of			Tcs. 68,847.02
Written off Concession	Tcs.	14.70	„
Depreciation	„	6,955.00	„ 6,969.70
			Tcs. 61,877.32
Balance from half-year ended 31st Dec., 1912			„ 2,430.38
Available for distribution			Tcs. 64,307.70

This amount was apportioned as follows:—

By paying a dividend of 9½%	Tcs 47,500.00
By paying Directors' Fees	„ 5,000.00
By paying Auditor's Fee	Tcs. 300.00
By paying Manager's Bonus	„ 2,375.00
By paying Staff Bonus	„ 800.00
By carrying to Statutory Reserve	„ 2,665.62
By carrying forward to next half-year	„ 5,577.08
	Tcs. 64,307.70

GENERAL

Sino-Japanese Through Traffic Agreement.—The Sino-Japanese Through Passenger Traffic Agreement was to come into force on October 1st.

For through passenger traffic between the Peking-Mukden Line and the Chosen Railway through the medium of the intervening Mukden-Antung Line, the following through traffic stations have been named:—

In Chosen

Fusan, Nandaimon (Seoul), Pingyang, and Chinnampo.

In China

Hsinmintun, Shanhaikwan, Tientsin, and Peking.

The availability of through tickets between the Chinese and Korean Lines is fixed for 20 days, whilst those between the Japanese Government Railways and the Peking-Mukden Line will hold good for 30 days.

The free weight limits of passengers' baggage are agreed upon as follow:—

For a 1st class passenger.....150 lbs.
„ 2nd „ „ .....100 „
„ 3rd „ „ ..... 80 „

The difference in the standards of currency in Japan and China is a source of great trouble to the Railways concerned in the distribution of their respective proportions, but they have agreed that in principle the passengers' interests shall have precedence in the exchange process.

The majority of through passengers between the S. M. and the Peking-Mukden Lines being coolie immigrants and emigrants riding the lowest class, the S. M. Railway will continue to calculate the respective shares of receipts from this particular source by its official exchange rate as it fluctuates from time to time, and will also continue to issue through tickets at the stations specified for the purpose in a separate agreement between the two Railways.

Projected Lines.—It is reported at Peking, says the *China Critic*, that the Chinese government has in view several railway schemes in South Manchuria. One of them is to lay a line between Tiehling and Mafengkou (the river mart on the Liao), another from Kaiyuan to Sunchatai, a third from Antung to Tashihchiao *via* Tatungkou and Hsiuyen, and a fourth, and the most important of all, from Kungchuling to a Mongolian trade centre.

BRITISH NORTH BORNEO

British North Borneo Lines.—Speaking at the 61st half yearly meeting of the British North Borneo Company on July 15, at London, the Chairman of the Court of Directors, the Right Hon. Sir West Ridgeway, said *inter alia*:—With regard to the railway, a considerable amount of work was carried out during the year in reconstructing and strengthening the line and in repairs to and renewals of locomotives and rolling stock. This included an expenditure of £31,988, which has been charged to capital. You will observe that the auditors in their report take exception to our having charged to capital the sum of £13,961 thus expended in the reconstruction of the line. They made the same objection last year, and I went fully into the matter. I stated:—"With regard to the railway, you will remember that I told you at the meeting here last July that the cost of improving the line and bringing it into a proper and efficient condition would not fall short of £100,000. In the year under review we have

GERMANY'S RIGHTS IN SHANTUNG

THE TSINGTAO-TSINANFU RAILWAY

Rumors that Germany is negotiating with the Chinese Government with regard to further railway construction in Shantung calls attention to the present status of Germany in the province which the world recognises as her sphere of influence.

Germany, by virtue of the Kiaochow Convention signed on March 6, 1898, was not only given a ninety-nine years' lease of the important port of Kiaochow, but was also conceded well defined railway and mining rights throughout the province. Two lines of railway were specifically mentioned: one from Kiaochow and Tsinan-fu to the boundary of Shantung province, via Weihsien, Tsinchow, Pushan, Tsechuen and Suiping; and the other from Kiaochow to Chinchow, with an extension to Tsinan-fu through Laiwu-hsien, though it was provided that the extension should not be begun until the first part of the line, the main line, had been completed, in order to give the Chinese the opportunity of connecting this railway in the most advantageous manner with their own system.

In order to materialise this programme it was stipulated that a Sino-German Company should be formed, German and Chinese representatives of the Company to effect all arrangements in connection with the commencement and carrying out of the construction work. The Chinese Government was committed to afford every facility and protection and to extend every welcome to representatives of the German Railway Company operating in Chinese territory, and emphasis was laid upon the fact that the object of constructing these lines was solely the development of commerce. On her part Germany declared that in inaugurating a railway system in Shantung she "entertained no treacherous intention towards China, and undertook not to seize unlawfully any land in the province."

A similar undertaking was made with regard to mining, and the Chinese Government consequently permitted German subjects to hold and develop mining property for a distance of 30 li (about ten miles) from each side of these railways and along the whole extent of them. On the line from Kiaochow to Tsinan-fu the localities of Weihsien, Pa-shan-hsien and various other places were specified for mining purposes; Chinchow-fu, Luiwu-hsien, and other points being likewise mentioned in regard to the Kiaochow-Tsinan-Chinchow line.

German capitalists, by virtue of the Convention, also obtained the right of preference to find capital for any scheme for the development of Shantung by the Chinese Government or Chinese citizens, and German made materials were guaranteed a preference over all others. China could only approach other nationals for capital or material if German capitalists or manufacturers declined to take up the business, and herein lies the chief hold which Germany has upon the province of Shantung as a sphere for development under her sole direction.

THE TSINGTAO-TSINANFU RAILWAY.—The Tsingtao Railway Station

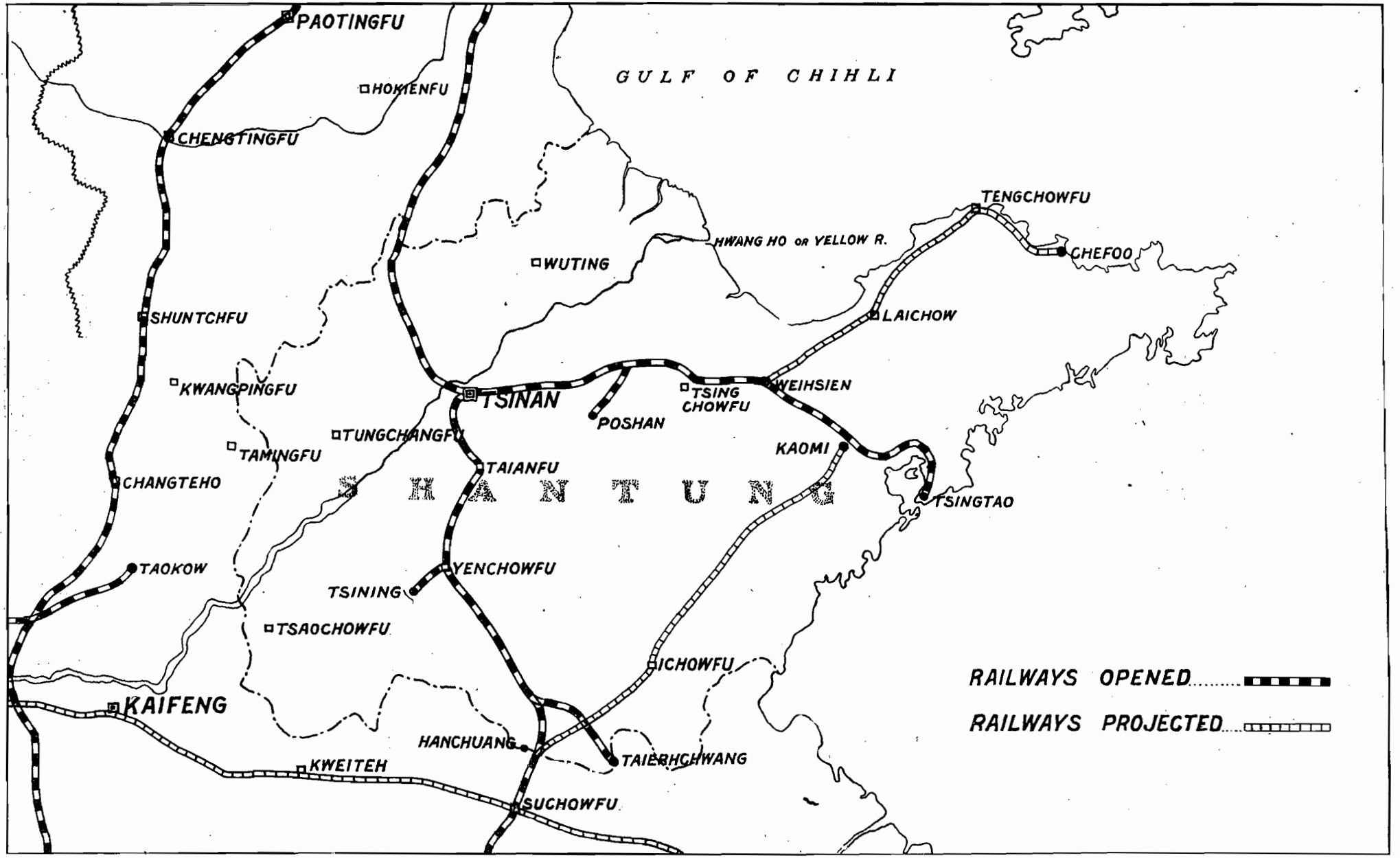
Other nations have acknowledged the paramount interests of Germany in Shantung, and practically speaking Germany has been free to use her own discretion in proceeding to develop the policy she originally decided upon to make the province productive and so establish the new port of Kiaochow upon a commercially paying basis. Wonders have been already worked on the small area of coast in Kiaochow Bay, and Tsingtao, the port which has been built there, is one of the finest on the China Coast. The harbor is a magnificent one, the facilities for shipping are up-to-date, and the city of Tsingtao stands pre-eminent as a summer resort. The colony is one to which visitors gladly accord the highest honors as a residential centre. In that respect it is the foremost in China, and there is no telling that a similar precedence may not yet be gained by it commercially.

With the building of this port Germany also set about the development of the hinterland and the inauguration of adequate means of transportation and communication. With the Kiaochow Convention in hand she at first determined upon a triangular railway system connecting Tsingtao with the capital city of Tsinan-fu, but later on modified that scheme. The base of the triangle was to be a line running south-westwards to Ichow-fu; one side was to proceed from Ichow-fu to Tsinan-fu, which would be the apex, and the other side was to connect the capital and Tsingtao.

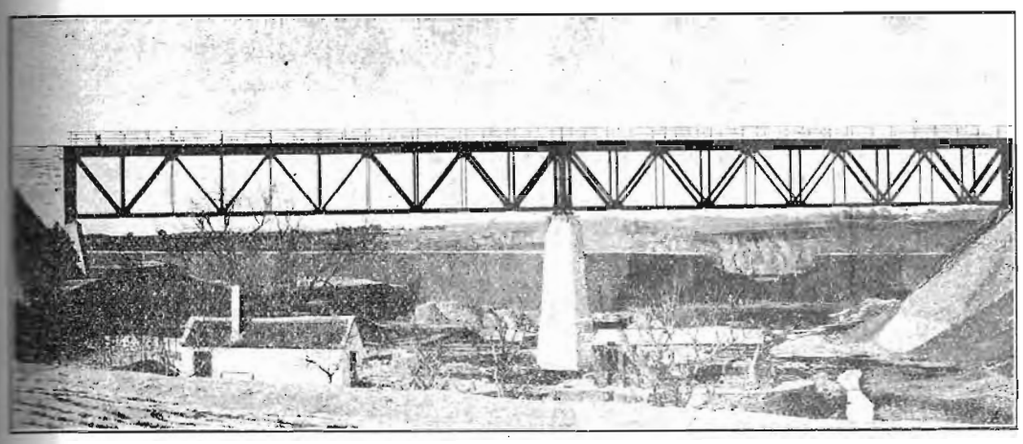
Of that system the line to Tsinan-fu direct from Tsingtao has been built by the Shantung Railway Company, an organisation with a capital of 54,000,000 marks, and connection has been made thence with Tientsin by a junction with the trunk line running from Pukow, on the Yangtsze River, to Tientsin, through Tsinan-fu. The line from Ichow-fu to Tsinan-fu has not been proceeded with owing to the construction of the Tientsin-Pukow line, which rendered it practically unnecessary, although no connection has as yet been made between Ichow-fu and this railway, and no arrangement has yet been come to with regard to the building of the line between Tsingtao and Ichow, although negotiations have been proceeding for some time.

In this connection the question develops of Germany possibly restoring in part the sovereign rights of China. The railway now in operation between Tsingtao and Tsinan-fu was constructed as a German railway by a German Company, with German and Chinese share capital, German equipment, and personnel so far as the high officers are concerned; and though the experiment has been decidedly successful, the German Government, for broad reasons of policy, may not repeat the experiment, although they are entitled to do so if they so desire.

Effect would seem to have been given in a measure to this intention in the construction of the northern section of the Tientsin-Pukow railway, the construction of which line practically paralleled the proposed Ichow-Tsinan-fu railway originally proposed as part of the system to be inaugurated under



RAILWAYS IN SHANTUNG.—Portion of the Belgian line from Lanchow to Haimenting is shown in the left hand lower portion of the map. The extension of the line from Tsinanfu to Shuntefu in Chihli has been talked about again recently, but is not shown in this map.



THE TSINGTAO-TSINANFU RAILWAY.—Bridge at Kilometre 316; length 80 metres

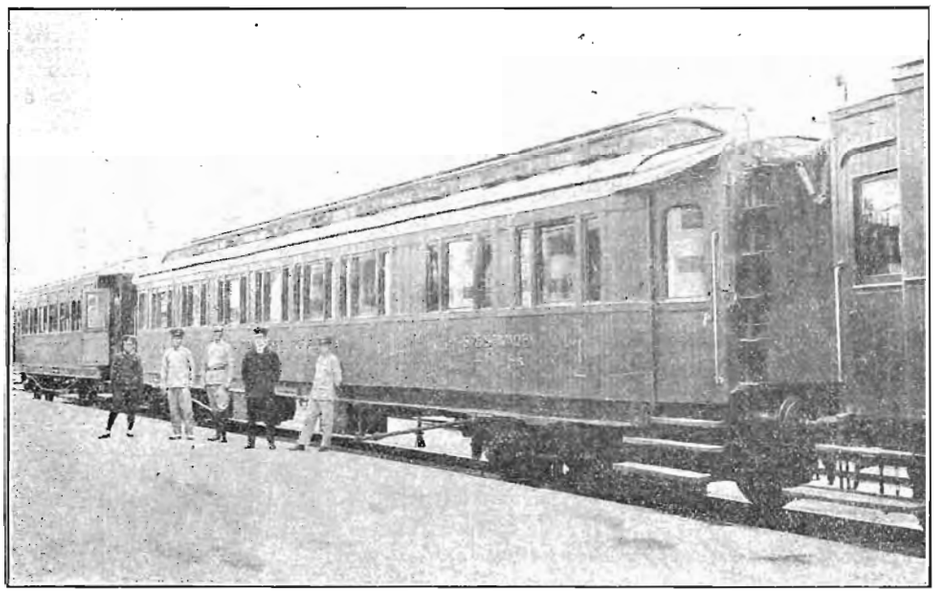
German Company management. And an extension of this idea may be made until all further lines in Shantung are built under German ægis for the Chinese Government or citizens.

Germany could claim that in following such a policy, she is restoring sovereign rights to China, and that she is abandoning distinct monopolies conferred upon her by the Kiaochow Convention. Instead of the German policy being political it is purely economical, or at least that is the contention of Germany, and China is looked to for appreciation of the fact.

So far as the mining monopoly is concerned negotiations for an agreement commenced in 1911 between Germany and the Shantung Tutuh in connection with the restoration of rights held under the Convention, and if this is ratified mining will be free to the Chinese to develop except where mines have already been opened for operation by German companies at Hungshan and Fangtze.

Such concessions to China would be undoubtedly important at this period when the rights recovery craze is at its height among the Chinese, and when the political ideas of the Powers interested in China are being subjected to a change which may not contribute to the satisfaction of those patriotic citizens of the Republic who have long agitated against too paternal an interest being taken in their affairs by outsiders. The one railway built by a German Company in Shantung will, however, remain the property of that Company, and its working has been so satisfactory that it is worthy of study by the Chinese who contemplate the inauguration of railway enterprises in other parts.

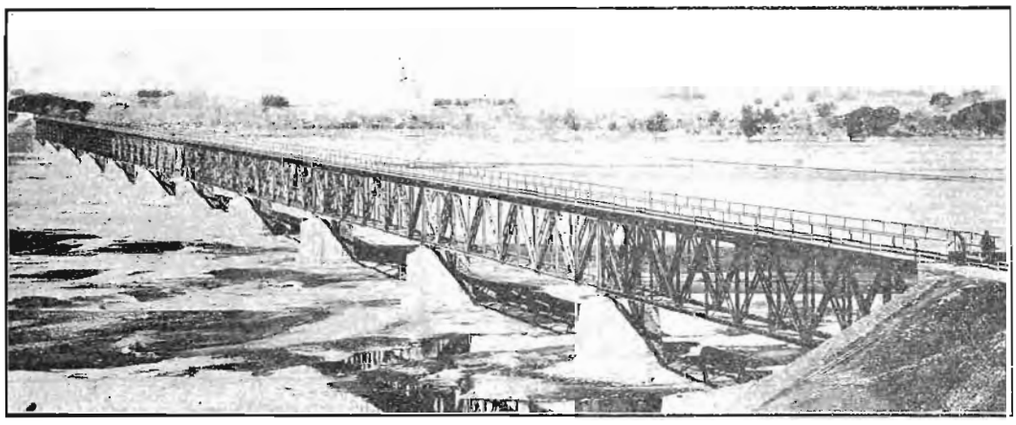
The report of the working of the Company for 1912 is published herewith, and shows an advance in profits over previous years. In 1911 the dividend paid was 6%, last year it reached 7½%.



THE TSINGTAO-TSINANFU RAILWAY.—An Express Train

Altogether 12,530 trains were run in 1912, and the passenger returns averaged 23,655 weekly, while the average of goods per week totalled 16,385 tons. The maximum number of passengers carried in one week was 35,469, while the maximum weekly cargo was 32,267 tons. In the year, 1,230,043 passengers and 852,001 tons of cargo were carried on the line, earning the gross income of $4,239,664; of this amount $970,246, or 22.89%, was from passengers; $3,229,969 or 76.18% from cargo, and $39,448, or 0.93%, from other sources. The average earnings per kilometre was $9,758.92. With this railway company has now been amalgamated the Shantung Mining Company, the compensation paid the latter being $5,400,000, which was raised by the issue of new shares. From April 1 to December 31, 1912, the net receipts from the Mining operations were $660,000, and for the first quarter of 1913, $240,000. Thus the value of the shares in the Railway Company has been visibly enhanced, and under the new management the expansion of the mining operations is likely to be rapid and consistent.

Much discussion has taken place recently with regard to a line from Chefoo to Weihsien, the Chinese evincing a great desire to have the railway built in order to secure the development of Chefoo as a port. At Weihsien a connection would be made with the Tsingtao-Tsinanfu line, and on its way to Chefoo the railway would pass through Laichow, touching the coast—if the old proposal is followed—at Tengchow-fu and following the sea south-eastwards to Chefoo. German capital is expected to be offered for this project, but the Chinese Government has not yet made up its mind to proceed with the work, though efforts are now being made to develop Chefoo harbor by the building of a breakwater. The railway is essential if Chefoo is to

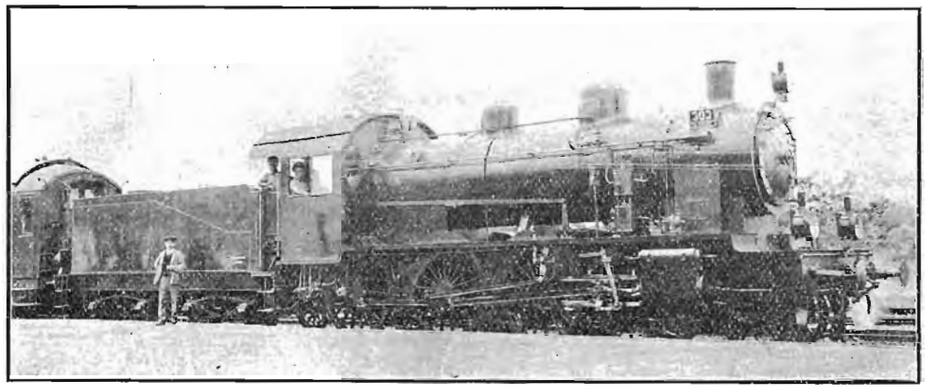


THE TSINGTAO-TSINANFU RAILWAY.—Bridge at Kilometre 258; length 470 metres

become an important shipping centre, but it is doubtful if even that will make it anywhere nearly as important as Tsingtao, which port the Chinese hope to rival.

The proposed railway from Tsingtao to Ichow-fu, with a branch to the Tientsin-Pukow line, is also under negotiation. With this feeder Germany would hope to attract considerably more traffic to Tsingtao. Already great efforts are being made to capture freight at Tsinan-fu from the Tientsin-Pukow line for shipment at Tsingtao, and if that system could be tapped further south by a connection with Ichow-fu it is undoubted that Tsingtao would benefit considerably. Connection with the Lung-Tsing-U-Hai railway,* near Suchow-fu, would also be beneficial, and it appears that the Tsingtao authorities will aim at a junction with this important midland trunk line It is probable that a connection will also eventually be made between Tsinan-fu—or some other point of the line to Tientsin—and some point on the Peking- Hankow railway.

That is the natural development of the system which must be carried out to make Tsingtao the thriving commercial port that Germany hopes to see it, and Germany naturaliy expects assistance from China in this direction if she foregoes the monopolies she now enjoys in Shantung, and which have been referred to above.



THE TSINGTAO-TSINANFU RAILWAY.—An Express Locomotive

The Shantung Railway

The railway from Tsingtao to Tsinan-fu has a length of 400 kilometres, giving direct connection with the Grossen Hafen (Big Harbor) and the Kleinen Hafen (Small Harbor) of Tsingtao. There are three branch lines, one between Changtien and Poshan 40 kilometres, one between Tsetchuan and Hungchan, seven kilometres, and one between Tsinan-fu and Haiau Ching-ho, three kilometres in length.

The main line leaves Tsingtao with a sweep around Kiaochow Bay, affording travellers a magnificent view of the coast and blue sea on the one side and the Lau Shan range of mountains on the other, and then strikes out westwards, by north, for Weihsien, continuing thence westwards for Tsinan-fu, the ancient commercial towns of Kiaochow, Tsingchow-fu, Chow-tsun being passed en route. Cultivated fields meet the eye in every direction.

Chow-tsun is famed as being the centre of the silk industry of Shantung, and the traveller has many opportunities of purchasing the best grades of silk at moderate prices. A few miles out from this city the steep hills which indicate the site of the "Imperial graves of Tseotien," where ancient sovereigns of the country lie buried, are to be seen.

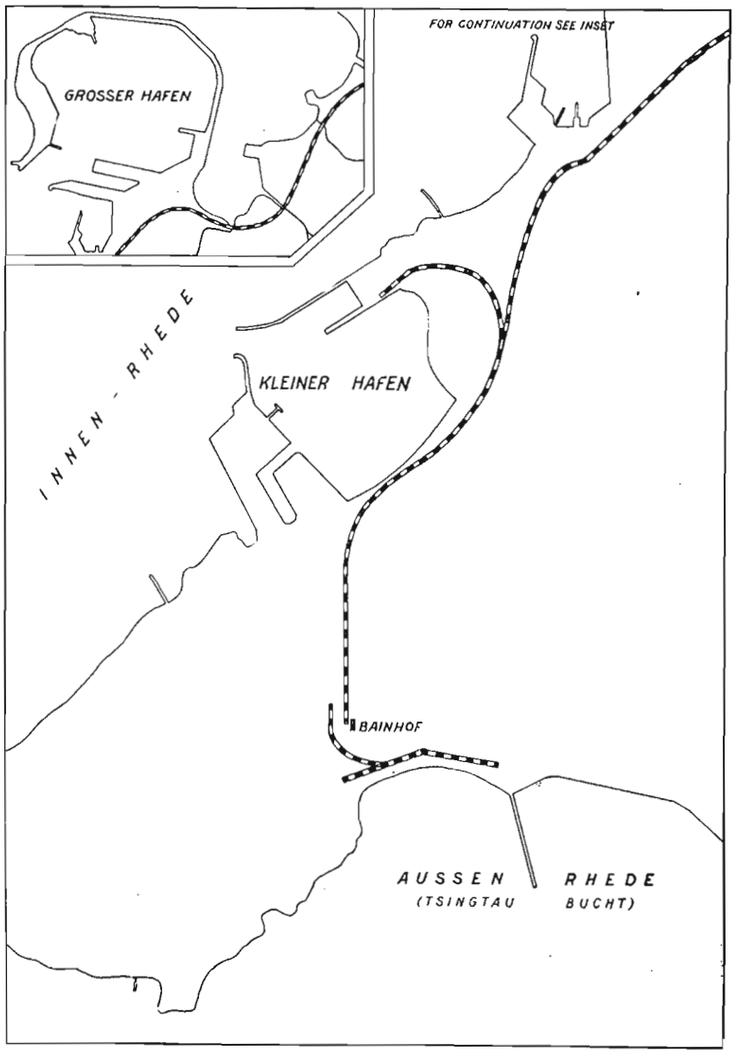
Tsinan-fu, the terminus, and the junction with the Tientsin-Pukow line, stands about four miles from the south bank of the famous Yellow River, known as "China's Sorrow" on account of its wandering propensities. The city is one of the oldest and most interesting in China, having many features attractive to the tourist student of Chinese life. Its curio shops, carpet manufactories, and silk embroidery establishments constitute a particular feature. It is the seat of the Governor of the province, and contains a University and a military school. It is electrically lighted, and maintains a large police force.

The railway station of the Shantung line, and that of the Tientsin-Pukow railway, are opposite one another and thus convenience is afforded to tourists—making a journey to the famous sacred mountain of Tai-shan, and "the holy shrine of Confucius" at Kufu comparatively easy. The passenger from Tsingtao to Peking remains at Tsinan-fu for one night, but is able to find comfortable quarters at hotels.

The country traversed by the main line from Tsingtao is highly cultivated. Sportsmen who wish to linger by the way find opportunity for hunting hare, fox, pigeon, snipe, woodcock, wild duck, geese, swan and heron. In cold winters wolves emerge from the mountains near Tsing Chow-fu and Talintschyh and go in search of food to the neighboring villages, where the inhabitants tell of many a successful hunt of these rapacious animals.

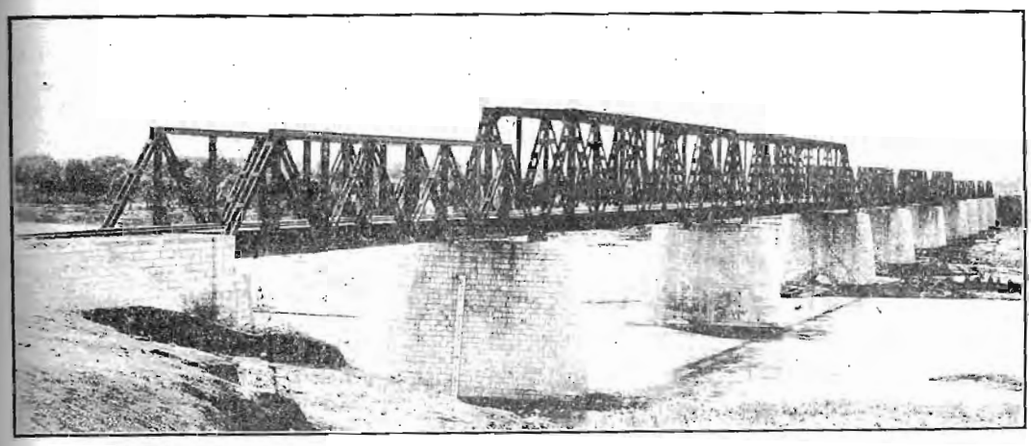
The branch line from Changtien to Poshan leads in to the picturesque Poshan valley, where beautiful wooded ravines and defiles invite the stranger to make prolonged excursions. Poshan is a very busy town, the inhabitants devoting themselves largely to the manufacture of glass and porcelain.

In this valley, too, are situated coal mines belonging to the Shantung Railway and Mining Company. Iron mines also exist, and both products figure largely in the traffic returns of the railway. Incidentally it may be mentioned that the coal from the Hungchan mines is said to be equal to the best Cardiff.



Plan of Tsingtao Bay, showing the Big Harbour (Grosser Hafen) and the Small Harbour (Kleiner Hafen). The railway, it will be remarked, has direct connections with the harbours.

*The Lung Tsing-U-Hai railway formed the subject of a descriptive and illustrated article in the FAR EASTERN REVIEW of April last.



THE TSINGTAO-TSINANFU RAILWAY.—Bridge at Kilometre 144 ; length 272 metres

The Tientsin-Pukow Railway and the Shantung Railway Company have come to an agreement for the issue of through tickets, which are on sale at the larger stations on both lines. Cargo and luggage are also transported from one line to the other without changing cars.

Shantung Railway Company

The following is the report of the Board of Directors of the Shantung Railway Company for 1912:—

The year 1912 closed with a profit of $3,063,909.13 (2,410,583.65)* and a dividend of 7½ (6%) for the capital and M. 12.50 (M. 5.00) for each special share. The receipts amounted to $4,239,664.01 (3,511,105.60) and the expenditure to $1,175,754.88 (1,100,521.95). In spite of the decrease in the shipments of construction material for the Tientsin-Pukow Railway both the passenger and the freight traffic show a remarkable increase. The high rate of the Chinese dollar—mean rate for the year M. 210.47, (185.99)—benefited the financial result of the company to a great extent.

There were no remarkable accidents, neither were any bridges or culverts destroyed during the rainy season.

The increase in traffic and the connection with the Tientsin-Pukow Railway necessitated the following improvements and building:

At Hamatun and at Ershilipu one small freight-shed; in Tsinanfu West the enlargement of the station in order to facilitate the passenger and freight traffic from and to the Tientsin-Pukow Railway; in Tsingtau a dwelling house for Chinese station and train personnel, and a car shed for the new 1st Class dining cars; a depôt at Tsingtau Grosser Hafen; at Syfang enlargement of the shops (not finished), a shed for the main storehouse, and an office building for the administration of supplies with dwelling house for the personnel; a lumber-shed for the central repair, etc., shops at Kaumi; a lodging-house for training personnel in Fangtse and Weihsien; a lodging house for train-personnel in Fangtse; a dwelling house for Chinese personnel at Tchangtien and Tsinanfu West.

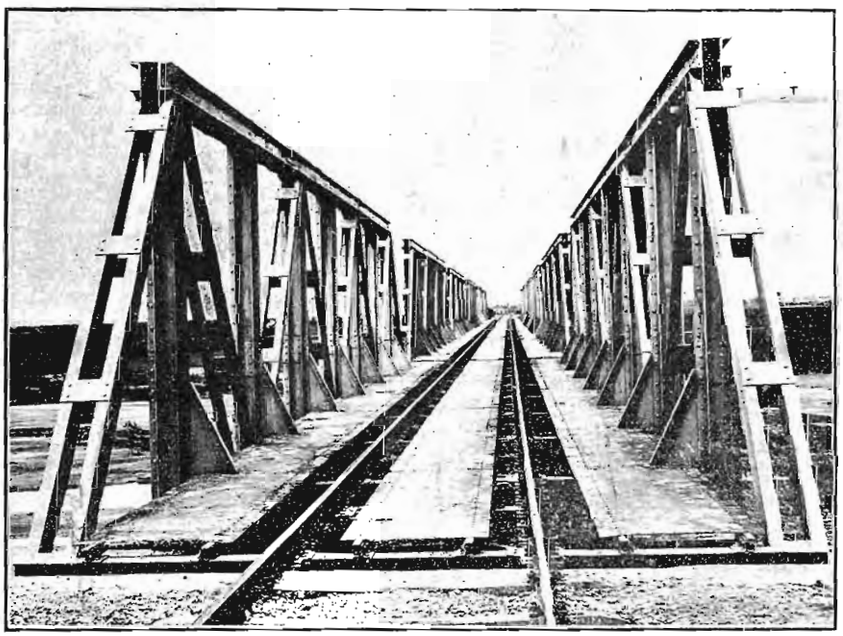
The condition of the tree plantations and shrubberies is satisfactory. Mostly acacia and willow were planted. The tree-nurseries of the Railway furnished the young trees.

The agreement with the Tientsin-Pukow Railway with regard to transfer of cars, which proved satisfactory, was in December, 1912, after the completion of the Hoangho-bridge, extended to all stations of the Tientsin-Pukow Railway. During the year 1912 the following cars were transferred:

From the Shantung Railway to the Tientsin-Pukow Railway, 3,959 (5,026) cars.

From the Tientsin-Pukow Railway to the Shantung Railway, 1,895 (492) cars.

The decrease of cars from the Shantung Railway to the Tientsin-Pukow Railway is due to the fact that the construction work of the Tientsin-Pukow Railway is nearing its completion and the shipment of supplies is decreasing accordingly.



THE TSINGTAO-TSINANFU RAILWAY.—Bridge at Kilometre 228 ; length 270 metres

Rolling Stock :—

Locomotives: 41 (41) viz:

23 ten wheeled, 6 coupled, 2 cyl. simple passenger engines.
4 ten wheeled, 4 coupled tank passenger engines
7 eight wheeled, 6 coupled tank-freight-train-engines
3 eight wheeled, 8 coupled 2 cyl. simple Freight-train-engines
4 eight wheeled, 6 coupled shunting engines

Total of 0.094 engine per kilometer of road.

Passenger and Baggage cars: 110 (100) viz:

15 Passenger cars, 1st and 2nd Class
5 „ 2nd „
8 „ 2nd and 3rd „
3 Dining cars
3 Kitchen cars
23 Baggage cars
10 „ and mail cars.
1 Office car
1 Saloon car.

Total of 1.253 cars per kilometer of road.

Freight and service cars: 1,051 (1,013) :

283 Covered wagons
557 Coal (open) wagons
75 Coke-wagons
5 2-story cattle wagons
10 Wagons for transp. of lime with lid
104 Flat wagons
3 Trav.-cranes
2 Tool wagons
1 Trav.-scales

Total of 2.419 cars per kilometer of road.

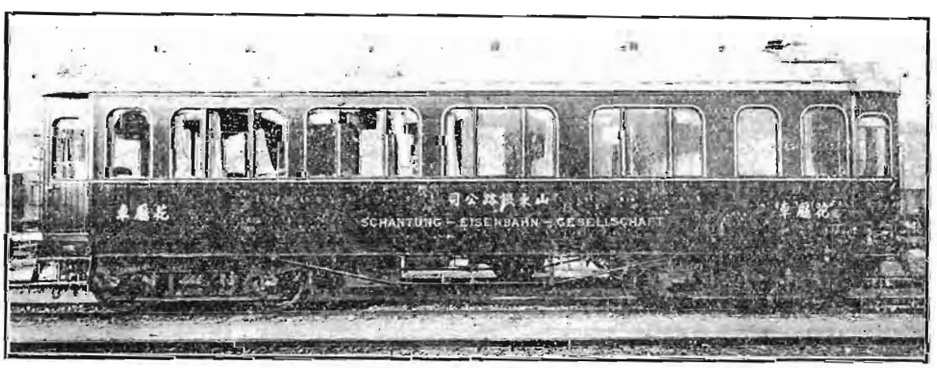
On the average there were 41 locomotives and 1,121.75 cars on hand during the year.

One express passenger train travelled daily between Tsingtau and Tsinanfu, also 16 mixed trains and about 9 Supply, etc., trains.

The total number of trains amounted to 12,530 (10,644) and the total number of kilometers travelled to 1,439,760 (1,322,805).

The number of kilometers travelled is distributed as follows:

	No. of trains.	Kilometer.
Passenger....	732 (688)	288,408 (269,490)
Special Passenger Trains	20 (9)	2,758 (1,646)
Mixed Trains	5856 (5,836)	653,680 (646,516)



THE TSINGTAO-TSINANFU RAILWAY.—A Saloon Car

*The figures in parenthesis are the corresponding figures for the preceding year.

	No. of trains.	Kilometer.
Trains carrying R. R. supplies ..	3,204 (2,049)	465,506(377,408)
Construction Trains....	2,718 (2,062)	29,408(27,745)

The rolling stock obtained the following results:

(a). Locomotives: 1,623,144 (1,432,374) Locomotive Kilometers distributed as follows:

	Loc. Kil.
in Passenger trains:	288,408 (269,490) ,,
,, Special P. ,,	2,758 (1,646) ,,
,, Mixed ,,	653,680 (646,516) ,,
,, Supply ,,	465,506 (377,408) ,,
,, Construction ,,	29,408 (27,745) ,,
,, Extra engines	153,019 (83,506) ,,
Empty	30,365 (26,063) ,,

in addition to the above

in Switching 42,606 (35,794) hours at 10 L. Km.=426,060 (357,940)

in Miscellaneous 20,370 (19,534) hours at 5 L. Km.=101,850 (97,670)

(b). Wagons: 61,807,064 (50,486,864) Wagon-Axle-kilometers, i.e.,

	Axle-Kilo.
Passenger cars	13,552,466 (10,315,180) ,,
Baggage & Mail cars	3,446,100 (3,206,848) ,,
Freight cars	44,808,498 (36,964,836) ,,
Empty	15,433,076 (12,683,180) ,,

Average strength of train: 42.93 (38.17) axles.

Average of traffic per week: 23,655 (17,482) Passengers; 16,385 (14,081) Freight tons

Greatest traffic in one week: 35,469 (25,283) Passengers; 32,267 (24,277) tons of freight

Total of traffic 1,230,043 (909,065) Passengers; 852,001(717,189) tons of freight.

RECEIPTS: Total $4,239,664.01 (3,511,-105.60) distributed as follows:—

Passenger traffic: $970,246.52=22.89% (714,204.55=20.34%)

Freight traffic: $3,229,969.37=76.18% (2,741,807.86=78.09%)

Miscellaneous $39,448.12=0.93% (55,093.19 =1.57%)

Average receipts per km. $9,758.92(8,081.91)

Compared with the preceding year the receipts increased 20.75%(—5.88%) as follows:—

Passenger traffic + 35.85% (+9.04)

Freight traffic + 17.80% (—7.63)

Miscellaneous — 28.40% (—48.51)

EXPENDITURE: Total $1,-175,754.88 (1,100,521.95) = per kilometer $2,706.37 (2,533.20) compared with preceding year + 6.84%(+10.08)

The proportion of the receipts to the expenditure 100: 27.73 (31.34)

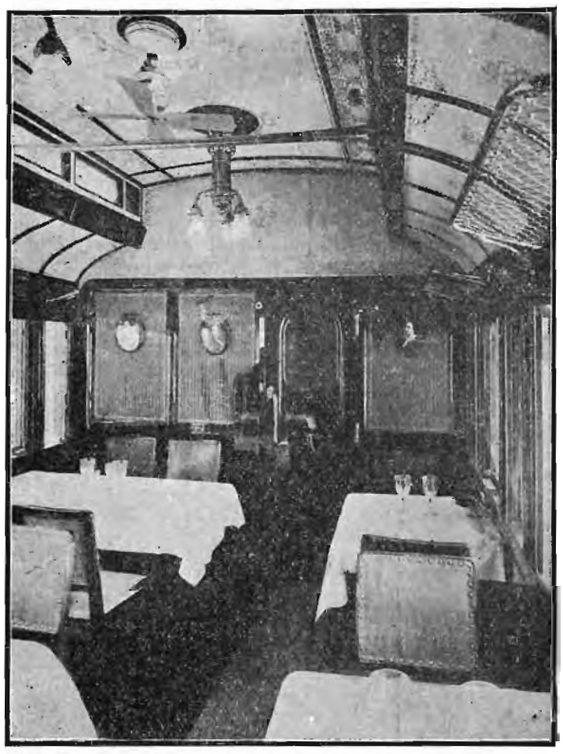
The following items concerning the balance have to be considered:—

Supplies on hand:

Main Storehouse	M. 884,393.36
Telegraph ,,	36,411.72
Coal & Oil ,,	79,635.48
Printing ,,	18,291.79
Fixtures, etc.,	9,500.91
Total	M. 1,028,233.26

Stocks and Bonds on hand: M. 520,000.00—3½% Bayerische Eisenbahnanleihe (Bavarian R. R. Loan) and M. 300,000.00 3½% Deutsche Reichsanleihe (German Loan) remained unchanged. On account of the low rate of exchange of the above bonds a loss of M. 26,540.00 during 1912 occurred. All the above stocks and bonds were sold during the current year 1913.

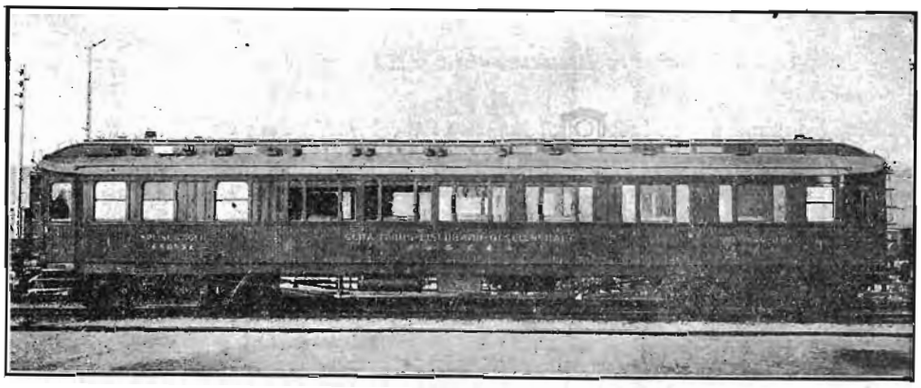
Outstanding Funds: Advances made to Shantung Mining Co. M. 1,000,000.00.



THE TSINGTAO-TSINANFU RAILWAY.—Interior of Dining Car

Repair and Improvement Fund stands with M. 3,397,289.11 against M. 499,583.95 of the preceding year. The additions were:—

For use of track and material	M. 405,000.00
Interest	115,908.21
Sale of old material	1,037.50
	521,945.71



THE TSINGTAO-TSINANFU RAILWAY —A Restaurant Car

The deductions were: Expenditure for track and supplies 22,361.76

499,583.95

To a newly formed "Disposition and Valuta" Fund M. 800,000 were transmitted.

PROFIT AND LOSS

Including M. 304,791.48, balance brought forward from 1911, and after deduction of:

M. 405,000.00—Addition to Repair and Improvement Fund

M. 800,000.00—"Disposition and Valuta" Fund

M. 26,540.00—Loss by rate of exchange,

The *net receipts* for 1912 amount to M. 5,596,296.61.

It was proposed to distribute the profit as follows:

To the Reserve Fund	M. 264,575.25
,, ,, Special Reserve Fund	264,575.25
5% Dividend=M. 50 per share	2,700,000.00
Compensation of Board of Directors	103,117.73
Taxes to the Government	116,235.46
Extra dividend of 2½=M. 25 per share	1,350,000.00
To special shares M. 12.50 per share	675,000.00
Balance to be carried forward	122,792.92
	M.5,596,296.61

The traffic in the last few months of the new year has been satisfactory, and it is believed that the decreased receipts due to the double Chinese New Year will be made good. It was suggested by persons interested in both the Railway and Mining operations, to acquire the entire Mining Company to become part of the Company. As the existence and extension of the Mining Company is of vital interest to the Railway as being a source of considerable shipments over the line, a resolution was adopted at a General Meeting of the Company on February 12, 1913, to take over the entire Shantung Mining Co. against a compensation of M. 5,400,000.00, to be covered by an issue of new shares equally entitled to dividends from January 1, 1913, excluding privileged rights of shareholders as to sale of products. The registration of the resolutions in the Register of Commerce at Tsingtau took place on April 4, 1913, after the consent of the Imperial Chancellor as to the transfer of the Shantung Mining Co. to the Shantung Railway Co. had been obtained. The Shantung Mining Co. (to be dissolved) announced in accordance with Par. 50, Civil Law, the dissolving of the Shantung Mining Co. as such and asked its creditors by circular to send in their claims.

According to reports on hand the net receipts of the Shantung Mining Co. from April 1 to December 31, 1912, amounted to M 660,000.00 and for the first quarter of to. current year to M. 240,000.00. According tethhese figures and the expectations of the General Meeting, the results to be obtained from the Shantung Mining Co. will equal those of the Shantung Railway Co. and yield about an even distribution of dividends.

See table on next page

THE SHIPYARD AT FOOCHOW

Minister Liu of the Navy proposed some time ago to place the Foochow Shipyard under the direct control of the Ministry of the Navy. He proposed that $200,000 as preliminary expenses for starting work and the monthly expenses of $30,000 be appropriated. His proposal has been approved at a Cabinet meeting, and this sum has been consequently included in the budget of the third year of the Republic. Minister Liu will take over the management of this shipyard. He is now in Fukien disbanding troops. The Cabinet has instructed the Minister of Finance to remit necessary funds to Foochow. Mr. Tsen Ching-lien, who has been appointed Director of the shipyard, has gone to Foochow with Minister Liu.—*Peking Daily News.*

Shantung Railway Company

Balance Sheet

BALANCE ON 31 DECEMBER, 1912.

		Mark	Pf.		Mark	Pf.
Construction Account ...	*M* 56,929,324,15			Assets	54,000,000	—
Addition	„ 1,192,664,—	58,031,968	15	Outstanding Coupon stock.	14,650	—
				Creditors	25,624	41
Tree	*M* 91,822,68			Repairs and Improvement funds	3,397,289	11
Nurseries and plantations	„ 13,503,27	105,325	95	Reserve funds	1,181,276	12
				Special Reserve funds ...	1,181,276	12
Supplies		1,028,233	26	Disposition a Valuta funds	800.000	—
Goods billed en route		507,870	—	Profit and Loss account ...	5,596,296	61
Stocks and Bonds		717,380	—			
Cash in hand:						
In Berlin	*M* 1,034,83					
In Tsingtau...	„ 30,383,79	31,418	62			
Debtors:						
In bank...	*M* 3,879,274,46					
Outstanding	„ 1,894,941,93	5,774,216	30			
		66,196,412	37		66,196,412	37

PROFIT AND LOSS ON 31 DECEMBER, 1912.

Debit.		Mark	Pf.	Credit.	Mark	Pf.
Expended in operation		2,464,629	99	Brought forward for 1911.	304,791	48
Addition to Repair and Improvement funds		405,000	—	Gross receipts and Interest	8,987,675	12
Disposition a Valuta funds		800,000	—			
Loss by exchange		26,540	—			
Net profit		5,596,296	61			
Distribution:						
Reserve funds	*M* 264,575,25					
Special Reserve funds ...	„ 264,575,25					
Dividend 5 per cent.	„ 2,700,000,—					
Directors' fees	„ 103,117,73					
Government Taxes	„ 116,235,46					
Extra dividend 2½%	„ 1,350.000,—					
Special shares	„ 675,000,—					
Carried forward	„ 122,792,92					
	M 5,596,296,61	9,292,466	60		9,292,466	60

Character of Traffic

LIST OF GOODS SHIPPED

	1912	1911	1906	1905
Coal and Coke	471,808	418,536	207,876	158,115
Piece Goods	57,477	47,505	8,952	25,353
Metal, Machinery	13,625	42,962	8,912	9,873
Beans	48,777	35,575	36,572	38,409
Coal oil	34,516	31,626	10,331	2,936
Wood and Woodware	20,167	20,412	15,153	14,515
Oil	17,182	20,973	5,005	4,127
Cotton, raw and fabrics	4,458	9,721	25,648	9,899
Paper	8,545	7,961	7,134	1,685
Earthenware	8,740	7,796	5,209	3,847
Straw matting, etc.	10,385	6,166	3,897	3,993
Vegetables	45,911	30,635	2,340	2,193
Lime	5,866	2,868	3,358	3,285
Sugar	7,566	2,738	4,388	—
Grain	6,419	2,213	1,477	995
Matches	6,747	2,155	4,246	1,125
Tobacco	3,051	2,019	686	708
Cash	707	1,293	724	2,425
Rock of all kinds	2,906	1,104	1,942	2,026
Cement	668	1,051	1,965	3,607
Indigo	1,489	1,004	1,092	783
Kauliang...	5,136	926	907	—
Glassware	549	852	—	630
Flowers, plants, etc.	1,263	721	—	—
Silk cocoons	963	631	605	354
Silk	990	503	162	101
Oilseed Cake	1,504	435	—	3,727
Mill products	45	240	451	740
Rice	15	160	3,053	3,712
Salt	4,598	60	—	—
Brooms	4,029	33	1,757	1,029

CHINESE GOVERNMENT'S EXPENDITURE

The Ministry of Finance has submitted a statement of administrative expenditure for August to the Loan Audit Office for examination. The grand total is $9,710,000 apportioned as follows:—

Ministry of Foreign Affairs . . .	300,000
„ Interior.	350,000
„ Finance.	2,150,000
„ War	3,150.000
„ Navy	230,000
„ Justice	100,000
„ Education	220,000
„ Agriculture	60,000
„ Industry	50,000
„ Communications . . .	100,000
Extraordinary expenditure	3,000,000

The extraordinary expenditure is for Parliament, the Printing Bureau, the Peking University, and the Imperial Household Allowances.—*Peking Daily News.*

PHILIPPINE'S COAL TRADE

Mr. J. B. Suttor, Commercial Commissioner for New South Wales in the East, gives the following details of the formation of a Coal Consumers' Association in the Philippine Islands.

"The object of the formation of the association," Mr. Suttor explains, "which is composed at the present time of the Government of the Philippine Islands, Manila Electric Railroad and Light Company, Manila Railroad Company, and the Philippine Railway Company, was for the purposes of purchasing fuel in large quantities in the open market at a lower unit cost than it could be purchased by any of the individual members separately; to ensure constant and regular shipments of coal; to reduce handling charges, and to employ a manager and fuel expert, whose duties will not only be to recommend the purchase of certain kinds and quantities of coal, but also to advise the consumers thereof of the best methods whereby the highest efficiency in combustion can be obtained, and to supervise the inspection and analysis of such coals purchased, the distribution, stevedoring, etc.

"The association is open to any concern which desires to enter as a member on the same basis as the original parties to the agreement. At the present time the association contemplates the purchase of about 137,000 tons of coal as follow:—

Government of the Philippine Islands, 36,000 tons.

Manila Railroad Company, 35,000 tons.

Manila Electric R. R. and Light Company, 40,000 tons.

Philippine Railway Company, 10,000 tons.

Compania General de Tobacos de Filipinas, 16,000 tons.

"The association will be governed by a board of directors consisting of five members, two of them will be nominated by the Governor-General of the Philippine Islands, and three selected by the other members of the association. The five members in turn will elect a chairman who, in conjunction with the manager and fuel expert, will transact all business of the association.

"The organisation of the association is the result of the exhaustive investigations and report of Mr. E. Randolph Hix as coal expert for the Government. Through these investigations, which began in 1910, Mr. Hix acquired a knowledge of the far eastern coals, which was valuable to the association, and he has been appointed manager and fuel expert."

THE RAILWAYS OF CHINA

REPORT OF CONDITIONS IN 1912

A statement of the standing of the various government railways under the control of the Ministry of Communications during 1912, the first year of the Republic of China, has been issued, having been compiled by the Railway Department, from the annual reports of the various lines. It is pointed out in a brief introduction that no transport of passengers or cargo of any consequence was done on the southern section of the Tientsin-Pukow railway, as after the revolution there was little or no business offering, and steady business was only commenced after the connection with the northern section of the line in October of 1912.

A note with reference to the Shanghai-Nanking railway states that the capital of that line is greater than that of any other railway in comparison, and as a result the income derived from the traffic was not sufficient to pay principal and interest of the loan floated for its construction. Great difficulty was experienced on the railway during the revolution which was an additional handicap of a serious nature. Nothing in the way of permanent improvement was therefore done by the Ministry, the desire being to keep down expenses.

The report on each line is divided into four sections, under the headings of first, "General Affairs," second "Construction Work," third "Traffic" and fourth "Miscellaneous," and the Board aims at showing the result of all matters connected with each railway.

Following are two of the reports, (others will appear later) :—

PEKING-HANKOW RAILWAY

GENERAL AFFAIRS

Staff Conferences.—The Directors and heads of various departments held monthly conferences when all matters suggested by the employees of the railway were discussed, the points for consideration being circulated in advance to those attending the conferences. Ordinary matters were dealt with by the monthly conferences, any question too important for decision being decided at the semi-annual conferences held in March and September.

Police System.—Formerly the policing of the line was conducted independently of the management of the railway, the police officers being incapable, and the system corrupt. In July reorganisation was commenced, the whole line being divided into three sections. The head office was established at Peking, one Superintendent and three assistants being installed in each section. A special set of regulations was adopted governing the conduct of the police officers. During the first two months following the reorganisation great improvements were made, but a few months later there was a relaxation, many thefts of spikes, etc., from the railway being reported. Another effort was made further to improve the service to safeguard materials, and the patrol force originally under the Maintenance Engineers was converted into a regular patrolling force, a Captain and assistant Captain being stationed on either side of the Yellow River to take charge of the southern and northern sections.

Bureau of Investigation.—The Bureau of Investigation has been placed under the Directors of the railway in Peking, and is controlled by one chief and a special staff of assistants. Qualifications for members of this Bureau are knowledge of railway affairs combined with actual experience on the line itself. A special set of regulations was drawn up for the Bureau, which was divided into two sections—Compilation and Investigation. This Bureau has been of great assistance to the Administration in providing accurate and early reports on the various matters calling for inquiry, and in compiling the reports connected with the line.

Hospitals.—No special hospitals were provided for this railway in the beginning, the French Hospital at Peking being relied upon. The railway contributed a large sum of money to this hospital for medical fees. The Directors decided to establish hospitals under the management of the railway administration, the first being opened at Hankow, where many Chinese foreign-educated doctors were engaged. One Chinese doctor was also sent to Chang Sin-tien. Sickness was frequent during the summer time and the wards had to be enlarged. A doctor was placed in residence in Peking to attend to cases on the line north of Cheng Ting-fu, a ward being opened.

Mr. Chow Tze-chi, Minister of Posts and Communications

Purchase of Materials.—Originally various offices for the purchase of materials enjoyed independent powers and led to great confusion. The Directors therefore decided to establish a central bureau in Peking to which must be referred all requisitions for material. This bureau is under the control of the Engineering Department, the chief and staff being drawn from those originally in charge of purchasing supplies.

Leasing of Lands.—Regulations governing the leasing of land on the two sides of the track were drawn up, and a special officer was appointed to attend to transactions under this head. Notices were posted in the various villages along the railway announcing the policy of the Directors, the measurements and prices of land being fixed by the chief of the bureau. So many farmers applied for land that members of the maintenance department had to be sent to the assistance of the officer employed for this duty to have the work completed quickly.

Litigation.—In view of the many cases at law in which the railway has become involved a special legal adviser was engaged and a special office was allotted for his use in the Peking buildings. All agreements connected with the purchase of materials, and the employment of members of the railway staff are submitted to him.

CONSTRUCTION

Yen Cheng Station.—Owing to the congestion at this point a siding 1,362 meters long was installed, in addition to two new tracks 1,640 metres long, and a triangle shunting track. A water tower was erected. A large area of land was purchased for future improvements, the erection of engine sheds, coal storage yards, and turn-table being contemplated.

Bridge at Cheng-chow Station.—Cheng-chow station is the junction of the Pien-lo Railway, and to relieve the traffic a high bridge was erected for pedestrians. It is built of steel, there being two spans measuring 12.66 metres each. Three steel staircases were provided, measuring 3.2 metres each.

Fencing.—At the May conference it was decided to erect wooden fences around twenty main stations, the work being completed in 1912. It is contemplated to erect similar fences around all small stations.

Chienmen Station (Peking).—Since the Chienmen station is the first big station on the line the Directors decided that the equipment must be adequate and a model for other stations. The platform shelters were made better than those of the Peking-Mukden line and the platforms were improved. The shelter was carried on castiron columns, and canti-lever trusses, being solid in construction and imposing in appearance.

TRAFFIC

Coolie Staff.—The coolie staff has been reorganised. Hitherto coolies have been employed on the recommendation of various officials and were not under control. In May reorganisation commenced, the coolie foremen being discharged. Others were employed at $12 (Mex.) per month, the coolies being paid $7 per month. Special regulations were provided for the transportation and handling of luggage.

Running Time.—On the first of May the train service was reorganised, the time of the journey between Peking and Hankow being reduced from three to two days. The line was divided into three sections. Peking to Shun-teh being the first, from Shun-teh to Yen-cheng being the second, and from Yen-cheng to Hankow the third. Ordinary passenger trains were converted into fast trains, stopping at all stations. A through express train starts from each terminus on Tuesdays and Fridays, sleeping cars being provided, the price of the latter being reduced 15%.

Sleeping Cars.—Sleeping cars containing modern conveniences were provided for the fast trains between Shun-teh and Yen-cheng; the price per berth above the ordinary first-class fare being $4.

Connection with Peking-Mukden Line.—It was arranged that freight on the cargo shipped between the Peking-Mukden and the Peking-Hankow lines should be collected by the de-

spatching stations, a monthly settlement to be made by the two lines. The principal cargo transported between the two lines was lime and coal from Tuli and Chow Kow-tien, on the Peking-Hankow railway, for Tientsin; compressed cotton from Kao Yih-hsien for Tientsin; non-compressed cotton from various stations on the Peking-Hankow railway for Tientsin. The coal from Lin-chieng on the Peking-Hankow railway is shipped by the Peking-Mukden line as far as Tangku, at the mouth of the River. Anthracite coal from Shansi is shipped from Shih Kai-chwang to all the stations on the Peking-Mukden line. Passengers may also purchase tickets for the two railways at the main stations. Since the enforcement of this system it has proved to be very satisfactory. Traffic receipts were materially increased, and settlements were made at each month end without any trouble.

Tientsin-Paotingfu-Shih Kai-chwang Service.—The greatest volume of passenger and cargo traffic is between these three points and special arrangements were made to have through trains, passing through Feng-tai, and leaving out Peking.

Electric Staff System.—In May the electric staff system was introduced to replace the old idea, accompanied by a telephone system. Special officers were trained and placed in charge.

Signals.—Semaphore signals were established at all stations. At the small stations only two signals were installed, one at each end. At the large stations two signals were installed at each end.

Luggage.—Luggage has been placed under the care of the railway management since May. Prior to that time passengers took care of their own property. Checks can now be obtained when desired by the passenger.

Miscellaneous

Connections with other lines.—Similar agreements to that with the Peking-Mukden line have been come to with the Ching-tai and Pien-lo railways for the transportation of cargo and passengers.

Finance.—During the first six months the income was $6,047,884.19 (Mex.), the surplus being $2,137,837.50. During the latter half of the year the income was $7,509,829.37, the surplus being $3,108,426.70. The total income was $13,557,713.56. The profits for the whole year amount to $5,246,263.29.

PEKING-KALGAN RAILWAY

General Affairs

Accounts Department.—During the Manchu *régime* the accounts were kept according to the old style and were in charge of the Receipts Office. In 1911 an Audit Office was established, but the system was far from complete and the result unsatisfactory. On July first the Accounting Department was reorganised, old accounts were closed and new books opened under the charge of the Chief Accountant. Further improvements were made.

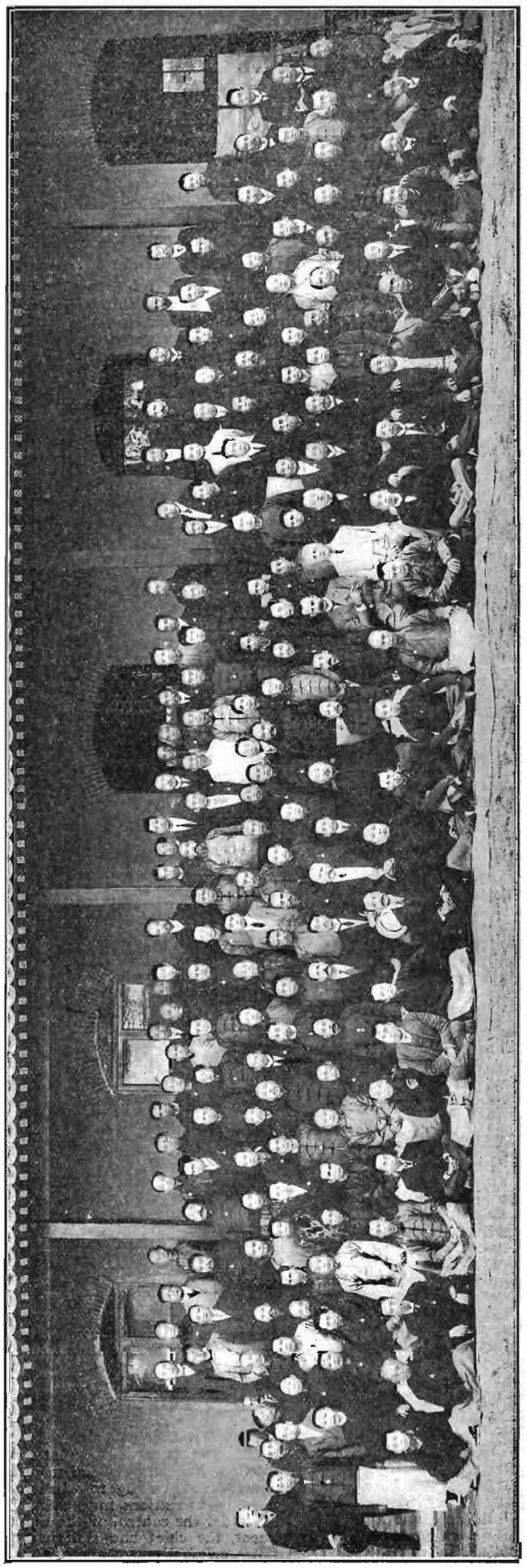
Division of Duties.—The affairs of the railway have been divided into three departments, the old style being found inconvenient. The General Affairs Department, Traffic Department, and Engineering Department now control respective sections, special regulations being created for their guidance. The division of duties has resulted in a lively improvement.

Construction

Nankao Water Supply.—A special water supply was installed at Nankao, 9,200 feet of water pipes being laid. The water is drawn from a high source in the Pass and is therefore a gravity supply. The water tower at the station yards has, however, been retained in case of emergency.

Repair Shop.—A repair shop was established at Nankao in addition to the old workshops, providing for the simultaneous repair of five locomotives. It is estimated that all the engines on the line can be overhauled and repaired in this workshop during a period of two years.

(*Continued on page 182*)



Photograph of officials connected with Board of Posts and Communications at a reception given at Peking as a Valedictory to the outgoing Minister, Mr. Chu Chi-chin, and as a welcome to the new Minister, Mr. Chow Tze-chi. The Chinese seated between the Europeans in the second bottom row are—reading from the left to the right—Mr. Yih Kung-cho, Director-General of Railways; Mr. Chow Tze-chi, the new Minister of Communications; Mr. Chu Chi-chin, the outgoing Minister, now Minister of the Interior; and Mr. Fung, Vice-Minister of Communications. The European on the left of these gentlemen is Mr. Piry, the Postmaster-General, the two on the right being Mr. A. G. Cox, Chief Assistant Engineer of the Peking-Mukden Railway, and Mr. J. E. Foley, Traffic Manager of the same line. Seated in the bottom row, to the lower right of Mr. Piry, is Mr. Mung, the Managing Director of the Tientsin-Pukow railway. Next to him on the right is Mr. Chu Kin-how, Associate Director of the Peking-Mukden railway, while in the same row, below Messrs. Cox and Foley, is Mr. Lo Ching, the Chief Secretary of the Board of Posts and Communications. Third from the right end of the bottom row is Mr. Kuan Men-chun, Managing Director of the Peking-Kalgan railway, and on his right is Mr. Li Tsoi-chee, Managing Director of the Peking-Mukden railway.

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JAPANESE CONCESSIONS IN MANCHURIA

IMPORTANT FEEDERS FOR SOUTH MANCHURIA RAILWAY

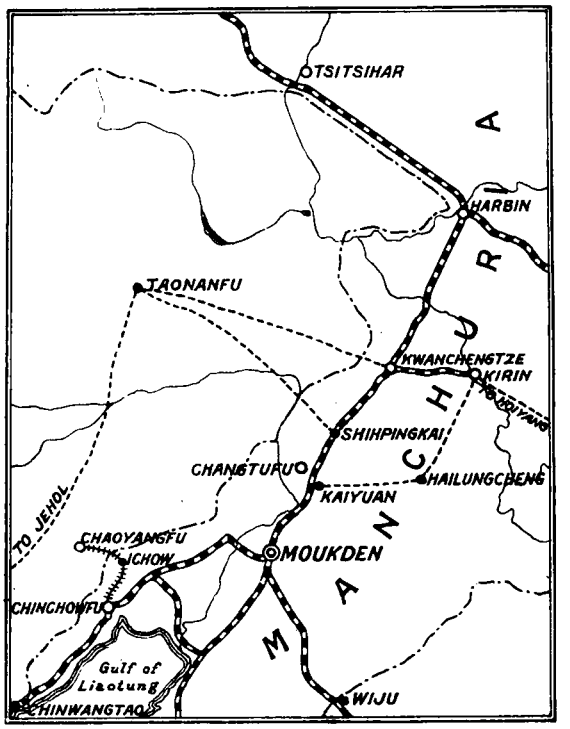
Considerable interest attached to the announcement early in October that Japan had secured certain railway concessions in Manchuria. At first the reports were somewhat indefinite in character, but it finally became known that the concessions embraced five lines. These were the following:—

Shihpingkai to Taonanfu; Kwanchengtze (or Changchun) to Taonanfu: Taonanfu or Chengchintun to Jehol; Kaiyuan to Hailungcheng and Hailungcheng to Kirin. Also the right to construct the line from Kirin to Hoiyang (or Hoiryong) in Korea is said to have been reaffirmed. The full terms of the agreement have not been published, but it appears that it was agreed that all these lines, except that between Chengchintun and Jehol, should be built with loans issued in Japan on the same conditions as the Tientsin-Pukow Railway loan. Regarding the Chengchintun-Jehol line it was agreed that in the event of the Chinese Government undertaking to build that railway in the future, it would refer the question to Japanese capitalists.

According to the *Tokio Asahi*, the idea of connecting Taonanfu with the South Manchuria Railway originated when the Chinchow-Aigun project was first brought forward. It was then Japan's intention to approach China for a concession that would involve a connection between the Chinchow-Aigun line and the South Manchuria Railway. The matter was not, however, definitely taken up until a few months ago, when the rebellion broke out. Negotiations were entered upon with the Japanese Minister at Peking, but progress was slow, and moreover Japan could not then conclude a loan without referring it to the Quintuple Group. Just about this time, says the *Asahi*, the dispute between Japan and China over the Nanking and other incidents occurred, and this furnished Japan with an opportunity to press China to grant the railway concession. Subsequently the Quintuple Group changed its policy in regard to industrial loans, and this enabled the signature of the agreement on October 5.

Referring to the nature of the proposed lines the *Asahi* states that the Shihpingkai-Taonanfu line will be 230 miles in length. The district between Shihpingkai and Chengchintung (which lies about 65 north-west of Shihpingkai) is rich and well populated. The rest of the line traverses the plain of Siliaho.

The Changchun-Taonanfu line, 180 miles in length, remarks our contemporary, appears to be superfluous if the Shihpingkai-Taonanfu line is to be built. The Chengchintun-Jehol line is 470 miles long, and it will be easily realized that it will be very difficult to extend this line further south towards Peking, therefore the business prospects of this line are anything but bright, unless another line is built to connect Jehol with Chinchow or a point on the Peking-Mukden railway. The Kaiyuan-Hailungchiang line is 120 miles in length, and will prove a profitable feeder to the South Manchuria railway because it traverses a rich country. The Hailungchiang-Kirin line is 110 miles in length, and will also indirectly serve as a feeder to the South Manchuria railway.



EXISTING LINES.....
PROPOSED JAPANESE LINES.....
PEKING-MOUKDEN LINE BRANCH.....

The *Tokio Asahi* states that of the five intended lines, comprising in all a length of 1,100 lines, the only useful line in connection with Japan's undertakings in Mongolia is the Shihpingkai-Taonanfu line. Conceded that the lines from Kirin to Heilungchiang and from Heilungchiang to Haiyuan are of practical value, these added to the Shihpingkai-Taonanfu line, would be 460 miles in lenght, but the remaining two lines can scarcely be regarded as of any value. In short, what Japan has secured compares very unfavourably with the railway concessions secured by England, France, and Russia in various parts of China. However much inclined the Foreign Office may be to boast of its success, the *Tokio Asahi* is of opinion that what it has secured hardly conforms to the requirements of the national activity.

It has been stated that the full terms of the agreement for these lines have not been disclosed, but reports have been published that the term of the loans is to be 50 years and the rate of interest 5 per cent. per annum. It is provided that the railways may be sold to China after the thirtieth year. The railways will be the security for the loan. All officials occupying responsible posts will be jointly selected, but the Engineer-in-Chief will be Japanese. Materials required for construction are to be bought through the lenders. The amount of the loan is said to be £3,000,000, with power to increase to £5,000,000 if necessary.

Surveys of these lines are now being carried on and construction work will probably shortly be begun.

Since the above was written it has been stated that the Japanese do not propose to construct the Changchun-Taonanfu line at present, although their right to do so has clearly been secured. A Peking telegram to the *North-China Daily News*, dated October 29th, says:—The situation with regard to the recent Japanese railway schemes is as follows:

Japan has arranged with China to supply funds for the construction of two feeder lines to the South Manchurian Railway, from Taonanfu to Shihpingkai and from Kaiyuan to Hailungcheng, a total distance of 300 miles. They have further arranged that in the event of China desiring to employ foreign capital to build railways between Jehol and Taonanfu, Taonanfu and Changchun, Hailungcheng and Kirin, approximately 700 miles, Japanese capital shall have the priority.

These arrangements have been the subject of an exchange of notes between the two countries, but no definite agreement has been signed, nor are the terms yet settled. Obviously, however, the Japanese, in consideration of the provision of money, are entitled to preference in the matter of the supply of material, construction and future management.

An interesting point in the above arrangement is that China, in giving the prior rights to Japan in connection with the Jehol-Taonanfu line, has violated the Chinchow-Aigun railway agreement with America, which provided for the construction of a line following practically the identical route for nearly 300 miles from Chaoyang to Taonanfu. When retiring from the Quadruple Group last February, the American group specially stipulated, and duly notified China, that they retained all rights under the Chinchow-Aigun Agreement.

In these surprising circumstances it is natural that the American group should have registered a vigorous protest in Peking.

British interests are also concerned, for the agreement provided that while the money was found by America, the work of construction should be undertaken by a British firm, Pauling and Co. British remonstrances, therefore, will doubtless be registered in due course.

THE SOUTHERN PACIFIC ROUTE

IMPORTANT ACCELERATION OF SERVICE

Only two half business days need be lost in the trip from San Francisco to Chicago since the Southern Pacific's new Overland Limited $10 extra fare train de luxe was established on April 5th. The time for the 2,276 miles was cut from 69 hours to 65 hours, a saving of four hours. By leaving San Francisco Friday at 2 p.m. a passenger reaches Chicago on Monday morning at 9 o'clock, thus losing half a day Friday and the business half of Saturday. Close connections are made with limited trains to New York, so that one can arrive there the morning of the fourth day at 9.30 o'clock, bathed, shaved, breakfasted and ready for business.

SPLENDID EQUIPMENT.

The Westbound Overland Limited leaves Chicago at 7 p.m. daily, arriving in San Francisco at 9.30 o'clock on the third morning.

These trains have new all steel equipment of the latest model, including a composite buffet clubroom car with barber shop and shower bath; dining car, standard Pullman sleeping cars and drawing room compartment observation car with ladies' parlor; library containing best selection of books, current magazines and periodicals, and also a stenographer.

These trains run via Southern Pacific, Union Pacific and Chicago and Northwestern.

A new train, the Pacific Limited, has been established between San Francisco and Chicago, leaving San Francisco ferry station at 10.20 a.m. daily, arriving in Chicago at 9.15 o'clock the third morning. Its new all steel equipment consists of standard Pullman and tourist sleeping cars, dining and Pullman observation car. The observation car contains a ladies' parlor, with library of latest fiction and magazines, writing desk and stationery.

This train leaves Chicago westbound at 10.45 a.m. and arrives at San Francisco, ferry station, at 8.50 o'clock the third morning.

EAST ON ST. PAUL LINE

The Pacific Limited runs via Southern Pacific, Union Pacific and Chicago, Milwaukee and St. Paul railway and is the fastest train between San Francisco and Chicago handling a tourist sleeper, making 69 hours' schedule between these points. The fastest train on which tourist cars were handled previously was on 83 hours' schedule. No extra charge is made on these trains.

These trains make connections at Chicago with limited trains of eastern lines, arriving in New York the fourth morning from San Francisco.

Train No. 10, the California Mail, leaves San Francisco ferry station, daily at 11.40 p.m., instead of 7 p.m. as formerly, arriving in Chicago at the same time as before or 8.30 o'clock, fourth morning, reducing the schedule 4 hours and 40 minutes. Westbound train No. 3 arrives in San Francisco at 1.30 p m., instead of 3.10 as formerly.

These trains have through tourist and standard Pullman sleeping cars between San Francisco and Chicago via Southern Pacific, Union Pacific, and either the Chicago, Milwaukee and St. Paul railway or Chicago and Northwestern railway from Omaha to Chicago. They have dining car and observation buffet clubroom car.

Further information relative to American Railway travel can be secured from Mr. G. H. Corse, Jr., General Passenger Agent, San Francisco Overland Routes, No. 4 Water Street, Yokohama, Japan.

IRON IMPORTS INTO SIBERIA

The Vladivostok Bourse Committee furnishes some interesting figures touching the position of the iron market for 1912. The import of iron during that term exceeded the 1911 figures by 322,000 pood. The demand in the Amur region for various descriptions of iron and iron goods is annually increasing, but as yet quite 88 per cent. of this demand has to be supplied from abroad. Excluding special freight for the Amur Railway imported during the year under review to the amount of 4,880,000 pood, the total import of iron, cast-iron, steel, and iron-ware was distributed according to country as follows:—

	Thousand of pood
Germany	1,872,000
Russia	283,000
Japan	99,000
China	45,000
Other countries...	68,000
Total	2,367,000

Reckoned by percentage, Germany's share was 80 per cent., Russia's 12 per cent., Japan's 3 per cent., China's 2 per cent., and other countries' 3 per cent.

It may be noted that the imports from Germany under this head comprise machinery, iron-ware, sheet iron, rails and other railway accessories, steel-ware, cast-iron ware, pipes, wire and wire goods, steel hawsers, axes, shades, ploughs, corrugated iron, scrap iron, nails, etc.

The varied character of the iron consignments required by the province very appreciably retards the establishment of iron works upon a large scale. It is a fact that attention has already been directed to the Olga region in the Primorsk, which is the richest in iron ore, running as high as 76 per cent. of pure iron as the future centre of a great iron-working industry, since this region is known to abound with coke coal. But it is impossible at the moment to build such a work relying solely upon the local demand for iron. According to technical data the equipment of a foundry with a productive capacity of less than two million pood annually would be unprofitable, whereas the local demand, although it exceeds two million pood, is made up of so many different kinds of iron goods that to supply it would require not one but several special iron works. Nevertheless these considerations should not be permitted to discourage capitalists since the fact should not be overlooked that right at hand is a market of colossal capacity, Japan to wit, while furthermore, with the annually increasing industrial development of the province, the demand for iron and iron ware is bound progressively to expand.

SARAWAK OIL OUTPUT

A telegram from Singapore reports that rapid progress has been made with the production of petroleum at Sarawak. Several wells at shallow depths have come in, giving a sustained production, and at a much deeper level a second oil stratum has been struck.

Large and regular shipments of the oil are taking place; the motor ship Juno being employed for this purpose, and the oil being treated and the Shell Company's refineries in Sumatra.

It is satisfactory to be able to record that the long-wished-for discovery of petroleum in this territory under British jurisdiction is established.

PEKING-KALGAN RAILWAY

(*Continued from page 180*)

Water Tower at Hsi Chih-men.—The water tower at Hsi Chih-men section (Peking) was enlarged from a diameter of thirteen feet to twenty feet, and another water tower was erected at Kiaohang bridge to supplement the supply by gravity.

Signals.—Up-to-date signalling has been installed to meet the requirements of increased traffic, similar to that on the Peking-Mukden line.

Hsi Chih-men Station.—Land was purchased near the station to increase the shunting yard and enlarge the station. Five shunting tracks were laid down, and space for two godowns is available for lease.

Nankao Pass.—Seven retaining walls have been erected in the Nankao Pass to prevent landslides and the fall of rocks on the line.

Shunting Tracks.—At Chingho 350 feet of shunting track was laid; at Kang-chung 2,748 feet; at Kalgan 400 feet of rails were laid to provide a loop to connect with the Chang-sui Extension. In all there are twenty-one new shunting sidings on the railway, which are estimated as sufficient for present needs.

Engine Sheds.—The engine shed at Hsi Chih-men has been lengthened 70 feet. A new engine shed was erected at Nankao 250 feet in length, one was built at Kang-chuang 96 feet in length and one at Kalgan 200 feet in length.

TRAFFIC

A through passenger and goods agreement has been made with the Peking-Mukden railway.

The large quantities of linseed and other products offering compelled an increase in rolling stock. During the year the Tongshan works were instructed to build 140 freight cars. A portion were delivered in 1912. Cars were borrowed from other lines to meet requirements.

Electric Staff.—An electric staff system was introduced for the work of the traffic over the Nankao Pass. Telephones were also installed, portable ones being carried on the various trains for use in case of accident.

Heating.—Third class cars were provided with warming stoves; the coal consumption being half a ton per month per car.

Locomotives.—Special Mallet locomotives were odered for work on the Nankao Pass from the American Locomotive Co. One locomotive was borrowed from the Tientsin-Pukow Railway to assist in dealing with traffic. Additional locomotives are required for the Chang-sui Extension.

MISCELLANEOUS

On account of the precipitous nature of the country great difficulties are encountered between Nankao and Kang-chung, freight trains having to be divided into three sections in order to be hauled over the Pass. The larger locomotives will obviate this necessity. From July 1 all available locomotives were pressed into service, thirty-six trains per day being run.

FAR EASTERN RAILWAYS

CHINA

Chengtu-Sianfu Railway.—Hu Chin-yi, Tutuh of Szechuan, considers that the construction of a railway from Chengtu to Sianfu is absolutely necessary, and has addressed a memorandum to the Ministry of Communications, stating his reasons. The Ministry agrees with him, and has informed the Szechuan Tutuh that it would insert an item covering the necessary expenditures for this new project in the Budget.

Pukow-Sinyangchow Railway Loan.—The Lower House has passed the agreement for the Pukow-Sinyangchow Railway Loan. The Bill then went before the Senate for approval. The Government delegate made his report. He explained that the present agreement was based upon a preliminary agreement signed during 1898. "The Pukow Sinyang Railway is one of the concessions demanded by the British merchants," said the Government delegate. "The Tsungli Yamen of the Ching Dynasty instructed the Chinese Railway Company to draw up a preliminary agreement with the British Corporation. It was stipulated that the line should start from Pukow of Kiangsu and pass through Anhui to Sinyangchow of Honan. The draft of this final agreement was drawn up soon after the conclusion of the Quintuple Loan. The bill was referred to the House of Representatives and was passed by the body. I hope this House will do likewise, so that work on the said railway can be carried out at an early date."

The members said that the bill should be referred to an examination committee. The Speaker said that it should be examined by the Financial Committee, but as no such committee was in existence, it would be advisable to wait until the committee was formed.

On October 29th the Senate finally passed the Bill.

The Chekiang Railway.—The Shaoshing correspondent of the *North-China Daily News* telegraphed on October 28th that he had been informed that the German firm of Messrs. Siemssen & Co. has obtained the contract for building the most important bridge on the Ningpo-Shaoshing section of the Chêkiang railway. The bridge will be about 600 feet long and will span the Dzaongo river. The contract price is stated to be Tls. 268,000. The work is to be completed in eighteen months.

Proposed Lines.—A Peking telegram of October 16, states that Peking vernacular papers have recently published several conflicting references to impending German railway contracts. There is reason to believe, however, the telegram continues, that negotiations have been hitherto confined to a suggested revival of the old Ichow-Kiaochou line, which would join the Tsinanfu-Tsingtau line at Kaomi with an extension beyond Ichow in the Tientsin-Pukow line which it would reach at Hanchuang (near the Shantung-Kiangsu border.) It is understood that the Germans make the construction of a line from Chefoo to Weihsien contingent on the other scheme, but German capital would be available for the Chefoo-Weihsien line with Chinese construction if the Ichow line goes through. It appears probable that the construction of both lines will begin at a comparatively early date.

Another Belgian Railway.—A telegram from Yunnanfu, dated September 29, states that a Belgian group has obtained Peking's sanction to construct a railway from Posehting in Kwangsi to Yunnanfu. Their representatives arriving that week.

Tientsin-Pukow Line.—Notice has been given by the management of the Tientsin-Pukow line (Chinese Government railways) of an alteration in the express service which will be enforced on and after December 1. From this date the service will be operated only once a week from each terminal.—Saturdays from Tientsin and Mondays from Pukow. The other two trains—from Tientsin on Wednesdays and Pukow on Fridays—will be withdrawn for want of passenger stock to attend upon the change of timings for suitable connections with other railways. The timings for through mail trains will remain unaltered.

Under the new schedule, the down express will leave Tientsin East at 11.25 a.m. on Saturdays, arriving at Tsinanfu at 8.12 p.m. and Pukow 1.13 p.m. on Sundays. The up train will clear Pukow at 1.45 p m. on Mondays, making Tsinanfu at 6.40 a.m. on Tuesdays and Tientsin East at 3,51 p.m.

These expresses are timed to connect at Tientsin East with the Siberian train de luxe to and from Siberia and at Tientsin Central with the mail trains to and from Peking; at Tsinanfu with the express trains of Schangtung-Eisenbahn to and from Tsingtau and at Nanking with the special day express of the Shanghai-Nanking railway to and from the port.

Peking-Hankow Railway.—Extensive changes are to be made in the train services on the Peking-Hankow railway on November 1st. Not only will the time for the journeys be shortened with fewer stoppages, but more trains are to be put on the railway. No change is to be made in the express trains, which leave Hankow on Friday evenings and Peking on Mondays, except that the arrivals will be a little earlier.

In the semi-direct trains all stoppages at small stations have been cancelled, and this will ensure arrivals to time while it does away with the annoyance to passengers of an early start. The times of departures of these are from Hankow every day at 9 o'clock in the morning, which will reach Peking the day after at 5.10 in the evening. The train from Peking will leave at 9.10 every morning and will arrive in Hankow the following day at 5.35.

As the semi-direct will now only stop at large stations a new service of slow trains will be run. These will stop at every station and not run at night. They will take three days on the journey from terminus to terminus The times of departure and arrival of these new trains at the larger stations fit in with the semi-direct express so that passengers coming from or going to small stations can connect with the faster train. The three stages run by the slow train are as follows: first day Peking to Shun-e-fu, second day from Shun-e-fu to Yengcheng-hsien and third day from Yengcheng-hsien to Hankow.

No great change has been made in the trains running between Peking and Paoting fu, Peking and Shiehiachuang, and Peking and Chuanghsintien, except that the times of the trains have been slightly altered.

A few new stations which have been completed and are now ready for passenger service have been added to the new time table. A further notice will be issued later in connection with those not yet finished. No alteration is to be made about luggage, dining cars, luncheon cars, and sleeping cars service, all of which will be run as formerly.

Transfer of Officials.—The *Peking Daily News* reports that the Ministry of Communications has issued instructions to the railway authorities on the transfer of employees from one line to another. The despatch reads as follows:—

"The Chinese railway enterprise is in its infancy, and the first railway was built only a little over ten years ago. In the early period of the railway development, there is a lack of experts. When a new line is to be built, it often happens that the director of the line employs engineers who are working on an old line. This manner of transfer of men from one line to another results in depriving the old line of capable engineers to look after its affairs. Moreover the employees frequently contrive to secure a transfer for better pay. In the interest of the different railways in this country, we hereby issue the following regulations.

(1) Before making a transfer of any member of the railway staff, the directors of the two lines concerned must consider such a transfer carefully and the vacancy occasioned by the change must be filled up beforehand.

(2) In making a transfer affecting members of and above the second class, the directors must secure permission from the Ministry of Communications.

(3) Any member of the railway staff who resigns a post in order to take up a better position on another line shall be dismissed and debarred from again entering the Government railway service.

In view of the scarcity of well-trained men for the construction of railways, the directors of the different railways are hereby instructed to pay great attention to the training of competent engineers.

Russian Railways in China.—The Paris *Temps* learnt from St. Petersburg that there was to be a conference at Paris in the last days of October between Mr. Pichon, Minister of Foreign Affairs, Mr. Delcassé, French Ambassador to St. Petersburg, and Messrs. Kokoffzoff and Ssassonoff, Russian Ministers, when amongst others the question of loans for Russian railways in China were to be discussed.

Railway Concessions in China.—The *Japan Daily Mail* states that Russia is reported to be asking the Peking Government for the right to lay a railway connecting Tsitsihar with Taonanfu in Inner Mongolia and another starting at Tuitsingshan in the vicinity of Harbin and joining the Amur Railway at Aigun. Germany is also said to be pressing China to accede to the extension of the Shantung Railway to Honan Province. In the meantime Britain has already obtained the right to lay a railway connecting Chungking with Lanchow, while Japan is negotiating for the right of laying a railway connecting Haiyuan in South Manchuria with Taonanfu in Inner Mongolia and another connecting Haiyuan with Hailung, to the south of Kirin. With regard to Japan's claim, it is rumoured that it embodied the mysterious demand made in regard to the Nanking affair, about which something was heard when reports of the demands appeared in the papers.

The Lotung Railway.—The Lotung Railway has now been transferred from private ownership into Government control, and the Government is earnestly considering the construction of this line. The old staff of the railway will be retained and work on the railway will be started very soon. It is expected that the construction work on this line will be finished within one year.

Nationalization of Tungpu Railway.—Inspired by the success of the nationalization of the Hunan Railway, the Ministry of Communications is contemplating to transfer the Tungpu Railway of Shansi under State management, and to incorporate the line in a big trunk system. The Tungpu Railway Company has been in existence for several years, but no progress has been made in the construction of the railway. This line runs from Tatungfu in Northern Shansi to Puchowfu in the extreme south of the Province, passing

through Taiyuanfu, Fengchow, Hwochow and Pingyangfu. The process of nationalization of this line will be similar to that of the Hunan Railway.—*Peking Daily News.*

A Japanese Concession.—A Reuter telegram tates that according to the vernacular press Japan is seeking a concession for a railway from Foochow westwards to connect with the Hankow-Canton Railway.

Yuet-Han Railway Loan.—It is stated that the Yuet-Han Railway Company has contracted a loan of $1,000,000 to assist it out of financial difficulties. One half the amount was required, it is stated, to pay obligations up to October 1, and the balance is necessary to pay for the materials. The loan has been arranged with the Hongkong and Shanghai Banking Corporation, the security being the line itself. One important result of the transaction is an agreement to connect the railway from Kowloon to Canton with the line being built by the Yuet-Han Company, which will be the southern section of the trunk line from Hankow. It will connect with the northern section of the Hukuang line at the frontier of Hunan.

The Lung-Tsing-U-Hai Line.—The search for a seaport for the terminus of the Belgian line now under construction between Lanchowfu, the capital of Kansu province, and the sea, has ended, it is reported, in the entire abandonment of the original idea to adopt Haichow as a harbor. As was pointed out in the *Far Eastern Review* of April last in a description of this line, no port could possibly be selected between Tsingtao and the Yangtsze river owing to the vast quantities of silt deposited on the coast by the Yellow River. We then gave a summary of the reconnaissance made by Mr. A. J. H. Charignon, Adviser to the Managing-Director of the railway, which indicated that the port of Haimen was the most suitable for the purpose, having distinct advantages in several ways. There is an excellent harbor there which can be readily made suitable for deep sea ships, and further it is on the Yangtsze River.

To bring the line to this point the location from Tsingkiang-pu would be through the towns of Fowning, Yencheng, Tungtai, Haian, Jukao and Nan-tun-gchow, and the length would be increased by over 100 miles. More important than that, though, is the fact that this line would secure a terminus on the Yangtsze between Pukow—the riverine terminal of the railway from Tientsin,—and Shanghai; the distance from the latter port being about 60 miles.

Kowloon-Canton Railway.—The earnings in 1914 of the main and branch lines of the Kowloon-Canton Railway are estimated at $372,600, or $53,000 more than the amount approved for 1913, said the Acting Governor of Hongkong in his budget speech on Oct. 9. The unrest which has prevailed in South China during the current year has seriously interfered with the normal development of traffic, and until more settled conditions are established any considerable advance in earnings cannot be expected. Working expenses are estimated at $271,209, an increase of $14,810 over the amount approved for 1913, which is entirely due to expenses incidental to an increased train service.

Expenditure on all accounts is estimated at $841,804 and receipts at $372,600 for next year's working, leaving a deficit to be met from General Revenue of $469,264.

SHANGHAI-NANKING RAILWAY

The following figures of traffic returns (approximately) for the week ended September 20 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	47,991	9,046	57,037
1912....	38,850	10,877	49,727
Increase.	9,141	—	7,310
Decrease	—	1,831	—

For thirty-seven weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,681,476	363,441	2,044,917
1912....	1,646,247	282,202	1,928,267
Increase.	35,229	81,421	116,650
Decrease	—	—	—

Week ended September 27.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	55,257	10,838	66,095
1912....	24,572	9,201	51,773
Increase.	12,685	1,637	14,322
Decrease	—	—	—

For thirty-eight weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,736,733	374,279	2,111,012
1912....	1,688,819	291,221	1,980,040
Increase	48,014	83,058	130,972
Decrease	—	—	—

Week ended October 4.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	55,911	9,132	65,043
1912....	43,443	10,523	53,966
Increase.	12,468	—	11,077
Decrease	—	1,391	—

For thirty-nine weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	1,792,644	383,411	2,176,055
1912....	1,732,262	301,744	2,034,006
Increase.	60,382	81,667	142,049
Decrease	—	—	—

Week ended October 11.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	58,639	10,798	69,437
1912....	42,102	9,685	51,787
Increase.	16,537	1,113	17,650
Decrease	—	—	—

For forty weeks.

Year.	Passengers.	Goods and Sundries.	Total
	$	$	$
1913....	1,851,283	394,209	2,245,492
1912....	1,774,364	311,429	2,085,793
Increase.	76,929	82,780	159,699
Decrease	—	—	—

JAPAN

Tokyo-Yokohama Line.—A Tokyo paper reports as follows, under date September 27:—The electrification of the line between Tokyo and Yokohama on the Government railways is progressing rapidly. The work, which was started last summer, consisted in the widening of the line so as to allow of four tracks being laid, two for the electric cars and two for the trains. This also necessitated the alteration of some of the stations, while, of course, the excavation work, some of which is not yet finished, occupied some time. The work was at first expected to be completed by next May, but October is now given as the probable date; the construction of the power plant, which is situated at Kamata, taking longer than was thought. It may be noted that the electric power is to be generated from gas, on the latest and most improved methods, experience showing that owing to the bye-products obtained this method of generating electricity is the most economical. It is interesting to note that gas, while driven from the field as an illuminant, except apparently on the Midland Railway in England, is having its revenge as the generator of its rival. The construction of its own power plant will enable the line to be independent. The power used on the present line running from Gofukubashi to Shinagawa and beyond is supplied by a private company.

The cars will start from the Central Station and will run to the reclaimed ground at Yokohama, crossing the railway line at Namamugi by means of an elevated track. Fifty cars will be run on the line made up into trains of two or three cars each, and second and third class carriages will be provided.

Yokkaichi Railway.—The Yokkaichi Railway between Suwa and Kawashima in Mie Prefecture, 3 4 miles in length, was opened for traffic recently.

State Railway Receipts.—The total amount of fares received by the Government railways throughout Japan during the first half of the current fiscal year, viz. from April until September, was 29,200,114 yen, an increase of 2,293,980 yen compared with the same period of last year, while freights amounted to 26,636,594 yen, which shows an increase of 1,766,086 yen. Thus the total amount of fares and freights was 55,841,604 yen, an increase of 3,060,066 yen compared with the same period of last year. This total means an increase of 2,254,111 yen compared with 53,587,493 yen, which is the estimated receipts during the first half year. The receipts during the second half fiscal year being expected to show an increase, the aggregate total this year will exceed 110,000,000 yen.

Improvement and Extension Fund.—A Tokyo paper reports that the authorities in the Japanese Railway Board state that the estimated expenditure for the improvement and extension of the railways, the scheme for which is spread over a period of eleven years from next year, amounts to something like 162,870,000 *yen*. Of this 95,460,000 *yen* is set aside for the purpose of extension, and 67,410,000 *yen* for the improvement of railways. According to the law for the Railway Special Account, the above funds ought to be raised by means of public loans, but influenced by the Government's financial policy during the past few years, as well as the conditions of the money market at home and abroad, the Railway authorities have been obliged to turn to the Deposit Bureau in the Finance Department, so far as the deficit in the funds outside the amount covered by the railway proceeds is concerned.

The advance capacity of the Deposits Bureau, however, has been of late considerably limited, the deposits in the postal savings bank, which constitute the bulk of the Bureau's financial resources, not by any means showing a reassuring tendency since last year. The authorities therefore raised a foreign loan in March this year to the amount of one hundred million *yen* in order to appropriate it for the redemption of the short term domestic railway bonds as well as the partial payment of the debts the Railway Board owed to the Deposits Bureau. This railway loan raised abroad, therefore, has only served to partially redeem the domestic railway bonds, and how to obtain the Railway funds required for the next and succeeding fiscal years still remains a question. Some time ago the Financial Affairs Committee of the Seiyukai made public what they claimed ought to be the Empire's future railway policy. This, however, was a plan formulated on the basis of party politics, and could hardly be applied to the actual policy of railway administration. The general belief among the authorities, in these circumstances, is that the Government should do away with the means hitherto pursued in raising the railway funds, and establish a definite policy of depending on foreign loans

to cover any deficit in the funds not met by the proceeds from the railways so far as the next five or seven years is concerned, although the expenditure for the extension and improvement of the railways should be defrayed in accordance with the annual actual necessity subject to determination by the capacity for railway construction. The annual expenditure for railway construction and improvement will therefore scarcely exceed forty million *yen*.

Railway Sleepers.—On the State railways 2,340 sleepers are laid for every mile of track, so that the number of sleepers used in the 5,305 miles of the Government railways reach a total of 12,313,700. Chestnut wood is chiefly used for making the sleepers, and the usual price paid by the Railway Board is 60 *sen* a sleeper. The sleepers on the State railways thus cost in round figures 738,822,000 *yen*. Under ordinary conditions they last six years. At present some 200,000 are replaced every year at a cost of 12,310,000 *yen*. The extension of the lines has caused a scarcity of chestnut wood and a corresponding increase in price, and it is thought that in present circumstances it will not be long before the Railway Board will have to turn to the use of some other kind of wood. The Department of Agriculture and Commerce has undertaken the plantation of chestnut trees, but the supply still remains far short of the demand, and the Railway Board is said to have in view the planting of chestnut trees on its own account.

Freight Cars Insufficient.—Insufficiency of freight cars is felt at present owing to the great increase of goods to be carried. In the district under the control of the Kobe Railway Division, 50,000 tons of goods are daily received for transportation, but there exists the carrying capacity for only 2,500 tons. In the Hokuriku districts there were frequent railway interruptions owing to the floods. The opening of the Toyama Industrial Exhibition rendered the railway traffic busy in Toyama district. The failure of the rice crop in the North Eastern districts necessitated the despatch of freight cars to that region for the transportation of foreign rice. These circumstances made the insufficiency of freight cars more keenly felt than ever. The Railway Board is now making new cars to fill the want.

Nakai Railway Dividend.—The Directors of the Nakai Railway Company have decided to declare a dividend of 8½ per cent. per annum. The Hanshin Electric Railway Company will declare a dividend of 6½ per cent. per annum.

Toshin Light Railway.—The newly projected Toshin Light Railway Company which has obtained official permission for its establishment, proposes to build a line from Komoro, Sakugun, Shinshu, to Nakagome-mura, Minami-Sakugun, a distance of 8 miles, with a capital of 250,000 yen. The company has opened offices at No. 1, Kotohiracho, Shiba.

MANCHURIA

South Manchuria Railway.—The S. M. R. Traffic Returns for the month of September give the total of Y1,359,425 and the daily average of Y45,314, being an increase of Y11,444 a day. The aggregated traffic receipts since last April up to the end of September, forming the first half of the current fiscal year, reached Y9,218,939, being an increase by Y2,164,295 on the corresponding period of last year.

The S.M.R. Co. has decided to attach second-class sleeping cars to the South Manchuria express trains between Dalny and Changchun, and also to the Manchuria-Korea express trains between Changchun and Fusan. The second-class sleeping cars are now in course of construction at the Railway Workshops at Shahokou and will be completed by the end of October. They will come into actual service on November 1st. With the introduction of the second-class sleeping cars the use of the first-class day cars, hitherto attached to each express train, will be discontinued. An express train on the S. M. R. line will thereafter be composed of first and second-class sleeping cars and dining car.

The new shares of the South Manuchuria Railway Company—just issued to the number of 20,000—have been allotted to shareholders at the rate of one for each old share held, and the first instalment of payment was called up on September 1. The money market, however, is tight, and even loans on the best approved security have to bear an interest charge at the rate of over 8 per cent., while not more than 80 per cent. of the market value of securities is advanced. Consequently, we learn from the *Asahi*, many people find it difficult to take up their shares, and they are already being offered for sale. The probable dividend is not more than 6 per cent., and old shares, Y.165 paid-up, have gone down to Y.148 or so, while new shares Y.20 paid-up, are quoted at about Y.10.50. The payment called on the new shares has been unsatisfactory, and the time allowed for payment has expired, but the Company refrains from issuing demand notes. It is learnt that the Company has deferred calling up payment of the last instalment of the old shares, drawing the money required from the reserve fund instead.

The S. M. Railway Workshops, Shahokou, received from the Chosen Railway Administration an order for 26 cars, of which 16 will be completed by the end of next March and the remainder two months later. This is said to be the first construction order given by an outsider.

A report from Dairen states that in view of the strong opposition of the shareholders to respond to any calls made by the South Manchuria Railway Company before Government accedes to their demand to raise the rate of dividends on the ordinary shares, the directors have decided to abandon the plan of making a call on the old shares as was proposed. The amount of 4,000,000 *yen*, which is the present deficit on the working capital, and which was to be made good by further calls on the original shareholders, will be met by short-term loans in the meantime.

The frequent conflicts with the police within the South Manchuria Railway districts is a matter to be deplored in view of the friction it causes in Sino-Japanese relations. The trouble seems to be due to the absence of a clear delimitation of the boundaries, and it is feared if things are left as they are now, the consequence will be the repeated outbreak of troubles of a more serious nature, inasmuch as Japan is going to extend the South Manchuria Railway in the future. With these considerations in view and in order to nip all future troubles in the bud, the Japanese Government, after conference with the Railway Company, has decided to establish a demarcation of the Railway districts. The Railway quarter consists of eleven districts, the area covering 2,702,201 *tsubo* in all, as detailed below:—

Districts.	*Tsubo.*
Antunghsien	1,475,536
Shahochin	49,819
Homotang	22,000
Wulungpei	62,992
Tangshancheng	46,212
Kaulimeng	44,000
Fenghuancheng	162,925
Suhotsz	43,670
Keekuansheng	184,498
Chushuichuang	48,326
Liachaho	44,009

Mr. J. Nakamura, the President of the South Manchurian Railway Company, states that freight traffic is increasing continuously on the line, and constant expansion has to be undertaken to meet requirements. To increase shipping facilities the Company is building an extensive addition to the wharfage accommodation at Dalny, and is also erecting reinforced concrete godowns. Rolling stock is also on the increase, freight cars and second class sleepers being under construction. The Company is building two locomotives at its own workshop at Dalny. The output of the Fusan coal mines is now some 700,000 tons per day, and developments are being carried on to increase that to 900,000 within two years. The Company is at present unable to supply the demand for coal. Arrangements have now been made to enhance travelling facilities for the public through express services having been arranged from Harbin to Tokyo and vice versa. The new second-class sleeping cars will be attached to the express trains between Dalny and Changchun, and also to the Manchuria Korea express trains between Changchun and Fusan. The cars are now in course of construction at the Railway Workshops at Shahokou and were to be completed by the end of October.

Proposed Japanese Lines.—The Japanese have arranged to construct the Shihpingkai-Taonanfu Railway. The contract is not signed, but it is unlikely that any hitch will now occur. This opens up the question of branch railways in Manchuria, which is considered an important matter, though no opposition is expected.

The Chinese and Japanese have agreed that Japan shall provide the money and that China shall build two branches of the South Manchuria Railway; firstly, the Shihpingkai-Taonanfu line which is very important strategically, as it will enable China quickly to check the raids of Mongols, who, in 1912, occupied Taonanfu for a long time and raided Manchuria from it. Taonanfu is considered the most important city in Eastern Mongolia, and it has 100,000 inhabitants. Secondly, a line from Kaiyuan eastwards to Heilungkiang city. Both lines will be valuable feeders of the South Manchuria Railway.

Alleged Russian Demands.—It is reported says the *Peking Daily News*, that the Russian Government has demanded of China certain railway concessions in Manchuria. One of these is a line extending from Tunchisan, 29 versts west of Harbin, to Blagoveshchensk, passing through Hulan, Suihua, Hailun, Mergen and Aigun, covering a distance of about 350 miles.

GENERAL

Duplication of the Trans-Siberian Railway.—The doubling of the rails on the Trans-Siberian Railway between Manchouli (Siberian frontier) and Cheliabinsk (Siberia) will be completed in 1914 and the service will be inaugurated next autumn. Herewith the progress of the works:

(1) The Manchouli-Tanhoi section (1,173 miles) will be completed undoubtedly before winter.

(2) In the Lake Baikal section there are many tunnels to be completed, and great difficulties to overcome that will call for all the knowledge of the engineers,

(3) The Irkutsk-Achinsk section (792 miles) is already completed and ready to be opened to traffic.

(4) On the Achinsk-Channi section there are many rails already laid, but there is still more ballasting work required to finish it. It is possible that this section will be ready for inauguration next winter.

(5) The Channi-Omsk section (183 miles) is opened to traffic.

(6) The Omsk-Cheliabinsk section (746 miles) is almost completed, but some bridges are not yet finished. This section will be ready next spring.

Cheliabinsk is an important station, where the travellers coming from or going to St. Petersburg must change vehicles. When the

double line service is in operation, the voyage from Moscow or St. Petersburg to Harbin will be made in seven days, which will be two days less than at present.

Tokyo-Peking Service.—By an arrangement between the Chinese and Japanese railway authorities, the journey between Tokyo and Peking is shortened to 3 days and 23 hours. Through trains with ferry between Shimonoseki and Fusan, are now running from Shimbashi to Peking via Shimonoseki, Fusan, Antung, and Mukden. Formerly those who went to Peking, took steamer from Kobe to Taku, spending six days on the trip. By rail a trip between Tokyo and Peking took about five days, as the travellers had to stop for a night at Antung and Mukden. The express that goes to Peking in 3 days and 23 hours leaves Shimbashi on Mondays at 8.30 p.m. The through trains from Fusan to Peking leave Fusan on Sundays and Fridays at 9.15 p.m.

Penang Hill Railway.—Construction work on the Penang Hill Railway was to be started on November. 1. Mr. A. R. Johnson is the engineer-in-charge.

LIGHT AND POWER

Kinugawa (Japan) Water Power Co.—A Tokyo paper of September 27 reports that finding its present output of 20,000 h. p. insufficient to meet the demand for power owing to the extension of the tramways in and around Tokyo, the Kinugawa Water Power Company has installed two new generators at its power station at Imaichi. The new plant has satisfactorily passed the official examination and will be put into operation in a few days, when the company's supply of power to the city will be about doubled.

Lake Biwa (Japan) Water Power Co.—The Lake Biwa Water Power Company, in which Messrs. Maekawa, Yoshimura and other prominent business men of Osaka are interested, has applied to the Government for permission for promotion. The proposed capital of the company is 7,000,000 *yen*. It is proposed that a power station be erected on the upper reaches of the Ujigawa to supply some 20,000 h.p. to the city of Osaka at rates lower than those at present being charged by the Uji Water Power Company. It is expected in Kwansai business circles that there will be severe competition between the two companies.

Liaoyang Electric Light Co.—The Liaoyang Electric Light Co. has declared a dividend of 7 % per annum.

Electric Trust in Kyushu (Japan).—An extraordinary general meeting of the Kyushu Electric Light Railway Company was held recently to consider a proposal for the organization of a trust to dominate the whole of the electric tramway and lighting trust in Kyushu. Five other companies are concerned in the combine, viz., the Karatsu Electric Tramway Company, the Saseho Electric Light Company, the Nanagawa Water Power Company, the Daikan Electric Light Company and the Itojima Electric Light Company.

Wuchang Electrical Works.—Work has begun on the Wuchang electrical works. The electrical plant is being erected by Messrs. Siemens Schuckwerk, the buildings being given in contract to Messrs. Lothar Marks and Busch.

MINING

Kailan Mining Administration.—The total output of the Administration's mines for the week ended September 13 amounted to 30,356.91 tons and the sales during the same period, to 30,637.89 tons.

Week ended September 20, 36,823.58 tons and sales during the same period, 28,752.22 tons.

Week ended September 27, 39,698.66 tons, and sales during the same period 41,346.24 tons.

Week ended October 4, 40,661.72 tons and sales during the same period, 33,388.28 tons.

Seoul Mining Company.—Telegraphic advice has been received from the headquarters of the above company in America, notifying that the books of the company would be closed from October 11 until the date of the general meeting, to be held at Deep River, Conn., on October 20. It has been decided that an interim dividend of twenty-five per cent (25 per cent.) for the first half of 1913 will be declared at the general meeting.

Coal in Saghalien.—A Tokyo telegram dated October 21 states that an extensive coal field, larger than the Yubari field, has been discovered on the northwestern coast of Karafuto (Saghalien). The coal is of excellent quality.

SHANGHAI TRAMWAYS

The returns of the Shanghai Tramways (Foreign Settlement) for the week ended September 24, 1913, are as under:—

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	19,468.10	17,112.64
Passengers carried	1,051,249	902,184
Car miles run	57,337	53,993

The loss by depreciation of subsidiary coinage for the week was $5,645.10 equal to 23.66 per cent. of the gross cash collected on the cars as compared with $5,059.20 equal to 24.10 per cent. for the corresponding week last year.

Week ended October 1, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	19,540.51	17,165.36
Passengers carried	1,046,758	901,349
Car miles run	58,050	53,730

The loss by depreciation of subsidiary coinage for the week was $5,585.24, equal to 23.37 per cent. of the gross cash collected on the cars as compared with $5,073.68, equal to 24.10 per cent. for the corresponding week last year.

The following is the return for September, 1913, and for nine months ended September 30, 1913, with figures for corresponding periods last year.

	1913. $	1912 $
Effective receipts	82,528.03	71,114.61
Passengers carried	4,442,628	3,734,092
Car miles run	245,332	229,032
Loss by depreciation of subsidiary coinage	24,058.29	20,999.82
Percentage of loss by depreciation of subsidiary coinage	23.73	24.10

	9 months ended Sept. 30, 1913 $	9 months ended Sept. 30, 1912. $
Effective receipts	675,842.89	588,875.06
Passengers carried	34,743,921	30,068,800
Car miles run	2,126,964	2,058,356
Loss by depreciation of subsidiary coinage	189,793.26	180,772.41
Percentage of loss by depreciation of subsidiary coinage	23.16	24.99

Week ended October 8, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	20,118.22	16,797.92
Passengers carried.	1,083,399	880,530
Car miles run	58,409	54,231

The loss by depreciation of subsidiary coinage for the week was $5,859.48, equal to 23.65 per cent. of the gross cash collected on the cars as compared with $4,927, equal to 23.99 per cent. for the corresponding week last year.

Week ended October 15, 1913:—

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	20,461.15	17,192.41
Passengers carried.	1,096,008	899,716
Car miles run	59,637	54,426

The loss by depreciation of subsidiary coinage for the week was $5,869.08, equal to 23.34 per cent. of the gross cash collected on the cars as compared with $5,006.26, equal to 23.81 per cent. for the corresponding week last year.

COMPANIES

North China Insurance Co., Ltd.—The report of the directors for the year ended June 30, 1913, states that the balance at credit of the 1912 account is Tls. 212,530.40 and, after deducting an interim dividend of 10 per cent. aggregating Tls. 36,711.30 paid on May 1 last, there remains a sum of Tls. 175,819.10, which the directors recommended should be appropriated in the following manner:—A final dividend of 10 per cent. on the paid-up capital, making 20 per cent. for the year; a bonus of 15 per cent. upon contributory premium; £10,000 transferred to sterling reserve, bringing that fund up to £150,000; and the balance to be transferred to underwriting reserve account, closing the account for 1912. The balance at credit of working account of 1913 to June 30 amounted to Tls. 256,087.77. The company's investments had been written down to the market values as at June 30 last.

San Miguel Brewery Co. (Manila).—The San Miguel brewery company has increased its capital stock to P6,000,000 according to papers filed in the executive bureau at Manila. This is the largest amount of capital ever specified in a set of application papers with the government. The fee of P325 collected is also the largest on record in the archives division. Some years ago the Mindoro Sugar Estates Company incorporated for about P3,000,000 and a fee of P300 was collected. The initial fee for the San Miguel company was P25, and the fee upon the increase of the capital stock P300, making the record figure of P325 in all. Of the P6,000,000 worth of the capital stock of the company P4,841,500 worth has been subscribed to and paid up.

The company has no debts.

Toyo Kisen Kaisha.—The semi-annual meeting of the Toyo Kisen Kaisha was held recently. Mr. Asano, the President, taking the chair. He made a report on the company's business for the half year ended June 30th. He afterwards presented the statement of accounts for the term together with the following proposal for the distribution of profits:—

	Yen.
Net profit	442,530.527
Brought over from last account	4,487.174
Total	447,017.701
Reserve	23,000.000
Dividend	416,000.000
Carried forward to next account	8,010.701

The accounts having been passed, the proposal to float a loan to the amount of 2,000,000 *yen* was placed before the meeting, and after a brief discussion was carried in its original form.

Nikkan Gas and Electric Light Co.—The distribution of profits of this company was as follows:—

	Yen.
Net profit for the term	218,323.52
Brought over from last acount.	8,259.53
Total	226,583.06

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

VOL. X. SHANGHAI AND MANILA, NOVEMBER 1913 No. 6

AN APPRECIATION OF CHINA'S RAILWAY ENGINEERS

BY GEO. BRONSON REA.

When the construction of the Kalgan railway was entrusted to a Chinese engineer, many foreign railway builders shook their heads and prophesied that the line could not be completed without their assistance, otherwise it would be unserviceable and unsafe. They refused to believe that any foreign educated Chinese engineer could successfully push a railway up the Nankau Pass to Kalgan. They had constructed the existing open lines under the terms of loan agreements which gave them full technical control, and they established the precedents and created the unit prices for construction work. It is hardly surprising that considerable doubt was felt whether a Chinese engineer would be able to equal the records that had already been established and considerable headshaking accompanied the appointment of Jeme Tien-yu to the position of Engineer-in-Chief to the Kalgan Line. Mr. Jeme had graduated from Yale University as a civil engineer, and passed many years in the service of the Peking-Mukden line under Mr. Kinder, where he acquired the practical finish to his technical education. When the whirligig of Chinese politics under the Manchu *régime* brought his old school friends into high power, and they determined to construct the Kalgan Line with Chinese survey, and with Chinese engineers, without the assistance of any foreigners, they selected Mr. Jeme Tien-yu as the man who would faithfully carry out the work entrusted to him. He took with him a few of his associates on the Peking-Mukden line, and surrounded himself with the best available men on whom he could rely. They were obsessed with one idea! To show the foreigners that they could build a serviceable line and keep the cost down to the Chinese idea of prices. Honesty was the keynote of Jeme's administration. By the elimination of all squeeze and commissions and dealing direct with the sub-contractors on the line, the unit prices for work were brought down to an unheard of low rate. Through their ignorance of the language, and Chinese costs for similar work, foreign engineers of the loan constructed lines were compelled to do business through an interpreter, and in fairness this fact should not be forgotten when instituting comparisons. This highly important functionary who received an average salary of $40.00 Mexican per month, was able to take advantage of the unfortunate conditions and, as a rule retired with a fortune after several months' engagement. This system was eliminated under Mr. Jeme's management; his Chinese assistant engineers settled the prices directly with the Contractor, exacted an adequate security, and then saw that the work was done according to specification. It is said that several of the sub-contractors on the Kalgan Line committed suicide, because of the strict supervision which compelled adherence to the specifications. Such incidents shed a sidelight on the methods employed in enforcing strict compliance with the specifications and emphasizes the honest character of Jeme's management. The incidents have been used to discredit Jeme with his countrymen and prove him to be a hard-hearted and bad man. A little reflection will, however, convince one that his attitude in enforcing specifications on a losing contract was

The Engineers who built the Kalgan Railway. Mr. Jeme Tien-yu is in the centre of the lower row.

absolutely essential to establish honest methods, otherwise the Kalgan Line, instead of being a monument to Chinese engineering skill, would have resulted in a costly, unsafe experiment to stand as an everlasting argument against China's ability to build railways and handle construction funds. The cost of foreign built Chinese railways through open country has averaged £10,000 per mile. The Kalgan line, piercing over a mile of tunnels and with heavy rock cuts and costly embankments, was completed at a cost of £8,000 per mile. Jeme's assistants learned the practical side of railway construction in this school, and although some of them have since been employed elsewhere others have remained on the Kalgan line, and have been entrusted with the construction of its extension to Kweihau-Chang. This line is known as the Changshui Extension.

The example set by Jeme in the Kalgan line has been followed in the construction of the extension by his former subordinates, with the result that even Jeme's costs have been lowered, and new records created.

In the August number of THE FAR EASTERN REVIEW appeared a full illustrated description of the work on the Changshui extension. In company with a well known British railway engineer I have since made the trip over the line to Tatungfu and inspected the work. If the Chinese deserved credit for the Kalgan Line, they are entitled to a fuller meed of praise for the manner in which they have

Mr. Chen Shi-liu, Assistant Engineer-in-Chief, Changsui Extension

constructed its extension. The Chinese are entitled to full unqualified credit wherever and whenever they have demonstrated their ability to survey, construct and equip a substantial serviceable railway. I have been over most of the railways in China, and am convinced that the construction work in the Changshui extension is equal to the best built line in China, and its cost is far below any similar line in the world. When the Chinese built the Kiangsu and Chekiang Railways, interested critics compared these lines with the Shanghai-Nanking, overlooking the fact that the cost was only about $30,000 gold per mile against a cost of $55,000 on the foreign built line. And when Jeme successfully

Mr. K. Y. Kwong, Engineer-in-Chief, Peking-Kalgan-Tatungfu Railway

terminated the Kalgan line, the same critics went out of their way to point out defects in grade and construction to justify their one-sided viewpoint. These criticisms have placed the Chinese engineers on their mettle, and to avoid the possibility of further reflections on their capacity, they have constructed the Changshui line with extreme care and solidity, and impartial critics will now admit that they have swung around to the other extreme and have constructed a line far too good for the traffic requirements of that country.

The mantle of Jeme Tien yu has fallen on Mr. K. Y. Kwong, who has directed the Changshui construction. Mr. Kwong is also a foreign educated engineer, with considerable experience in construction work. His assistant engineers, however, upon whose shoulders has devolved the supervision of the actual work, have never been out of China, and their entire experience has been gained either under Mr. Kinder or Mr. Jeme, and only under the latter were they allowed to assume any responsibility in serious construction work. With Mr. Kwong has been associated Mr. Chen Shih-liu as Assistant Chief and Mr. Chai Chao-tin in charge of construction. The line was surveyed and located by Mr. Chen, and Mr. Chai assumed actual charge of construction. The trio of engineers with their loyal assistants have bent every energy to avoid unfriendly criticism and establish a new record. They have done it.

The average cost of earthwork on the Shanghai-Nanking Railway was 15 cents silver per cubic yard, on the Canton-Kowloon line, 33 cents per yard, whereas the average cost per cubic yard on the Changshui extension has been about 6 cents per cubic yard. The cost of rock cuttings on the Canton-Kowloon line averaged $2 00 per fong or 50 cents per cubic yard, on the Changshui extension the highest price was 25 cents per yard. The average cost of concrete work was $6.25 silver per cubic yard, against a cost nearly twice as high in other parts of China. And so with nearly all other unit prices.

Labor costs are generally about 25 per cent. higher in the South than in the North, and this has to be taken into consideration, but allowing for all possible variations, it is a fact that the unit prices paid for construction on the Changshui extension are far below those possible to obtain in other parts of China, and as a consequence the line cost less, and the engineers have been enabled to construct a line beyond criticism. These men are worthy of all praise and commendation, and justly merit some recognition on the part of the higher authorities in Peking. The order of the Chia-ho has been generously conferred for political and other reasons on officials who have contributed far less towards the advancement of the Republic, and who are less worthy to receive it than these conscientious engineers, who have laboured to establish their country's right to recognition as railway constructors. If in the next distribution of honors from the Presidential Palace, the names of K. Y. Kwong, Chen Shih-liu and Chai Chao-tin should be amongst those entitled to wear the highest order of the Chia-ho, in their cases it would be only a just recognition of their services to the Republic, and serve as a stimulus for other young railway engineers to do their best for the good of their country.

Mr. Chai Chao-tin, District Engineer, Changsui Extension

THE TSINGTAO-TSINANFU RAILWAY

Under the title of "Germany's Rights in Shantung," in the last issue of the FAR EASTERN REVIEW, we described in general terms the route of the Tsingtao-Tsinanfu railway, and published the 1912 report of the working of the line. We now propose to give further details as to the character of the railway, which is, as previously explained, the property of the Shantung Railway Company. The original capital of the Company was 54,000,000 Marks, but when the Company took over the rights and property of the Shantung Mining Company on January 1, 1913, the capital was increased to 60,000,000 Marks, divided into 60,000 shares of 100 Marks each.

The grading for the road-bed began on September 23, 1899, at Tsingtao and Kiaochow, when His Royal Highness Prince Henry of Prussia turned the first sod. The engineers planned a single track, standard gauge line, and work was carried on in both directions, east and west, some 25,000 laborers being employed. Progress was fairly rapid, the grading of the road-bed presenting few engineering difficulties. For the greater part of its length the line runs through flat country, skirting the foot of the mountains in middle Shantung, and dynamite was only employed in a few places in the German leased territory and in a few cuttings on the western section.

Starting from Tsingtao station, which is eight metres above the sea, the railway crosses several low chains of hills between the larger rivers, and on reaching the water-shed of the Yun-ho, attains a height of eighty-eight metres, gradually ascending as far as the city of Tsing Chow-fu. Wide streams such as the Pai Cha-ho, Schyk a-ho, and Taku-ho, are crossed before Kiaochow, at the head of the bay, 74 kilometres from Tsingtao, is reached, and thence to Changling, 128 kilometres from Tsingtao, the line passes through a fertile plain crossing the two rivers, Mischui-ho and Kiau-ho. West of Changling the line reaches the hilly country and passes the ranges in long winding curves to Wei-hsien, 183 kilometres from Tsingtao. Many rivers rise in this part of the country, two of them being spanned by bridges of nearly 300 metres in length each.

Having reached Tsing Chow-fu the line descends to a height of 40 metres near Chow-tsun, and about 20 kilometres west of that city a chain of mountains running from south to north is crossed, the height reached at Wang-tsun being 158.73 metres above sea level. From this point the line gradually descends to Tsinanfu, where the altitude is but 34.80 metres above sea level.

THE TSINGTAO-TSINANFU RAILWAY.—Second class station at Tsinanfu East

Branch lines.—A branch line, 40 kilometres in length, beginning at Changtien, which is 47.17 metres above sea level, runs in a southerly direction up the Poshan valley, following the course of the Hsiau-fu-ho. The town of Tzechwan, the centre of the coal mines of the Company, is passed en route, and the terminal station is at Poshan, 179.40 metres above the sea.

A branch line seven kilometres in length from Setchwan also connects with the Hungchan coal mines; another branch four kilometres in length joins the main line at Fangtze with the coal mines, while another branch at Tsinan-fu, eight kilometres in length, gives connection with the Yellow River. In a short time a new branch seven kilometres long will be open to the iron mines at Chimin chen, where work has just been begun.

Length of Line and Gradients.—The total length of the main line is 400 kilometres, or 395,373.75 metres, of which there is a level grade of 41.62% for 164,452.68 metres. The ascending grade from east to west is 29.01%, the descending grade being 29.37%. The straight track totals 299,323.42 metres, or 75.71%, the curves absorbing 24.29%.

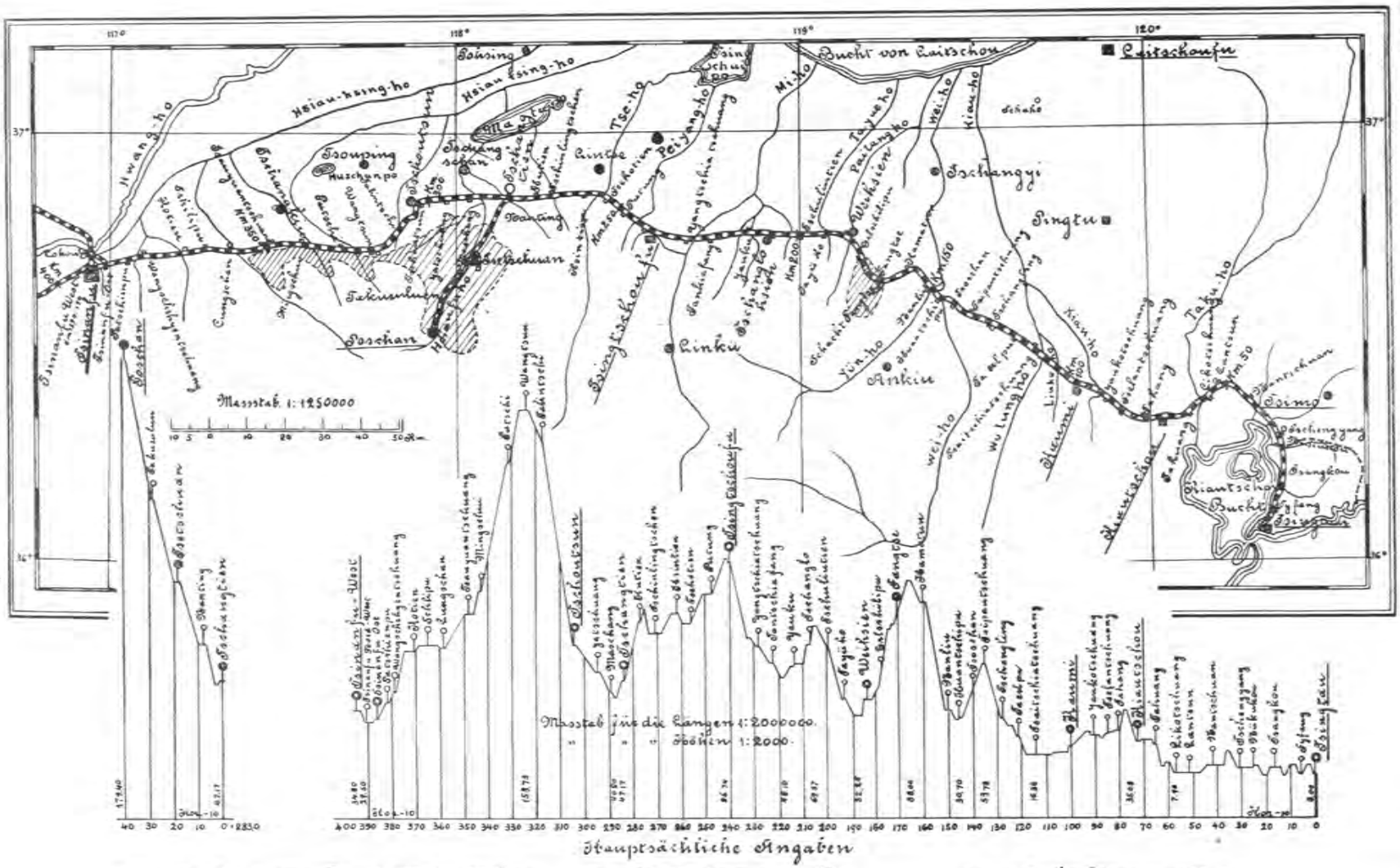
The Poshan branch line has a length of 39,200 metres, the level grade being 30.42%, and the ascending grade 69.58%. The straight track totals 27,410.04 metres, or 69.94%, the curves totaling 30.06%.

The steepest grade on the main line is one in 150, and on the Poshan line one in 100. The sharpest curve has a radius of 300 metres.

Road-bed.—The road bed is five metres wide, the slope being one in 1.5. In flat country, where floods occur, the slope is one in 2. Excavations are likewise five metres at the bottom. Ditches wide enough to carry the water which runs from the sides of the excavations have been made and lined with cement plaster.

THE TSINGTAO-TSINANFU RAILWAY.—Abutment of bridge at kilometre 326

THE TSINGTAO-TSINANFU RAILWAY.—Waterway at kilometre 243



Länge der Hauptlinie Tsingtau - Tsinanfu - West:	395,373 Km	Anzahl der Stationen:	64
" - Zweiglinie Tschangtien - Poschan	39.2 "	" " Wasserstationen:	20
" " Zechenbahn Fangtze	4.0 "	" " Drehscheiben:	8
" " Zechenbahn Tzechohuan	6.5 "	" " Gleiswagen:	12
" des Anschlussgleises Tsinanfu-Ost-Nwangtaitschiau	6.0 "	" " Lokomotiven:	41
		" " Gepäck- und Dienstenwagen:	105
		" " Güterwagen:	1057

Eiserne Brücken:	Öffnungen:	1150	Stck.
" "	Durchflusse:	7700	m.
Gewölbe: "	Öffnungen:	561	Stck.
" "	Durchflusse:	640	m.
Gerade:	326.739 Km =	75.186	%
Krümmungen:	107.834 " =	24.814	%
Oberbauarten:	176.375 " =	40.586	%
Gefälle	116.937 " =	26.910	%
Steigungen:	141.261 " =	32.504	%

MAP OF THE TSINGTAO-TSINANFU RAILWAY

THE TSINGTAO-TSINANFU RAILWAY.—Abutment of bridge at kilometre 365

THE TSINGTAO-TSINANFU RAILWAY.—A third class station

Earthwork.—As far as possible excavations of any considerable depth were avoided owing to the great friability of the soil. No tunnels were necessary.

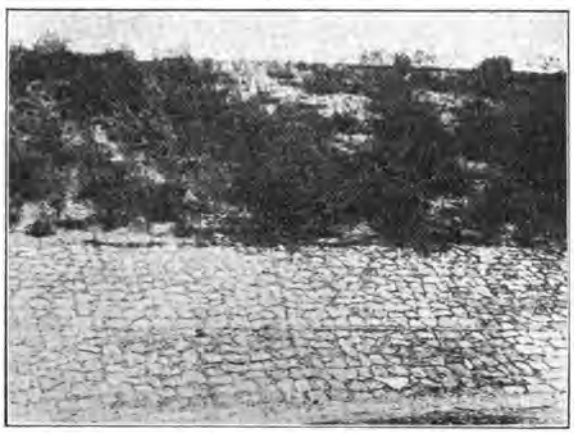
Embankments are protected against the ravages of heavy rains and floods by heavy stone reinforcements at the base, in addition to which the sides have been protected with sod, and trees such as willows, acacias and alders.

Ballast.—The stone ballast is 4.50 metres wide, and consists either of broken stones (granite or black lime stone) or of pebbles, and is at least 35 centimetres thick.

Bridges and Culverts.—The total number of bridges and culverts along the line is 1,330. Of these 1,150 are iron bridges, and 280 arch stone culverts. The latter vary in length, the maximum being six metres. The total length of all such culverts on the line is 640 metres.

The spans of the iron bridges vary from one metre to 46 metres, and their total length is 7,700 metres. The longest bridge is over the Tse-ho, 258 kilometres from Tsingtao, the length being 470 metres. The number and dimension of the bridges more than 50 metres long are as follow:—50 metres to 100 metres, seventeen; 100 metres to 200 metres, three; 200 metres to 300 metres; five; 470 metres, one.

Masonry.—The total mason work on bridges and culverts amounts to 210,000 cubic metres. The foundations of most of the large bridges are laid upon iron piles 12 to 14 metres long. In a few cases the foundations rest upon caissons.



THE TSINGTAO-TSINANFU RAILWAY.—Retaining wall work

Rails and Ties.—The normal length of the iron rails is 10 metres, and the weight 300 kg. each. The ties are of steels, weighing 50 kg. each. The material was all bought in Germany. The rails are ten centimetres wide at their base, 5.7 centimetres at their top, and are 12.50 centimetres high. The ties are 2.40 metres long and 8 centimetres high.

Stations.—There are 55 stations for all kinds of traffic on the main line, and four on the branch line to Poshan. Besides these there are five stations at the end of short branches for receiving cargo only.

The majority of the stations have goods sheds. Some important stations have two, the total number of all sizes being 32. European station masters are in charge at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu West.

Round Houses.—There are 16 round houses, with capacities varying from 4 to 12 locomotives. The round houses at Tsingtao, Kaumi, Fangtze, Chang-tien, and Tsinanfu are under European control.

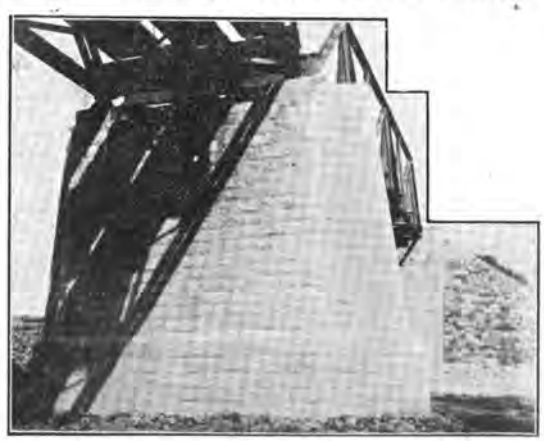
Turn-Table.—There are eight turn-tables with an inside diameter of 17.50 metres each.

Tank Houses.—There are 20 tank houses with water tanks of from 40 to 80 cubic metres each.

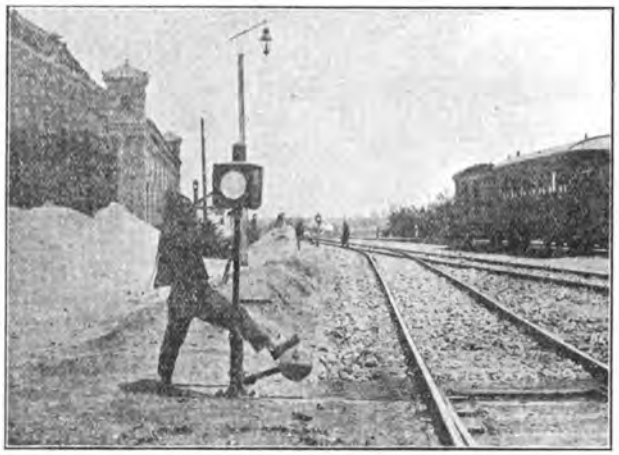
Platform Scales.—There are twelve platform scales of 55 tons capacity each.

Work Shops.—Large work shops and magazines are situated at Syfang, near Tsingtao, and are fitted with the best and most modern machines, operated by electricity. They are capable of effecting

THE TSINGTAO-TSINANFU RAILWAY.—The coal mine at Fang-tse



THE TSINGTAO-TSINANFU RAILWAY.—Stone pier of bridge at kilometre 318



THE TSINGTAO-TSINANFU RAILWAY.—A pointsman at work

THE TSINGTAO-TSINANFU RAILWAY.—The Pailang river at Weihsien

THE TSINGTAO-TSINANFU RAILWAY.—Tsingtao Train Yard

THE TSINGTAO-TSINANFU RAILWAY.—Guard at Shintien station

THE TSINGTAO-TSINANFU RAILWAY.—A bridge over the Pailang-ho near Weihsien

THE TSINGTAO-TSINANFU RAILWAY.—The wall of the city of Weihsien

THE TSINGTAO-TSINANFU RAILWAY.—Fourth class station at Kotien

all necessary repairs, and most of the outfitting work can be quickly and efficiently done. The shops are under the direction of an engineer of the Imperial German Railways, who has under his control 16 Europeans and about 700 Chinese apprentices. The stations which are under the supervision of Europeans are able to effect small repairs to locomotives and cars. They engage in this work about 100 apprentices and laborers.

Rolling Stock—On December 31, 1912, the rolling stock of the railway consisted of :—

14 locomotives of German manufacture.
3 dining cars of the most modern construction.
1 luxus car.
1 inspection car.
67 first, second, and third class passenger cars.
30 mail and baggage cars.
3 kitchen cars.
1,057 freight and coal cars.
43 section cars.
17 hand cars.
2 railway bicycles.

Opening of the Line—The first section of 74 kilometres to Kiaochow was opened for traffic on April 8, 1901, and further sections were put into operation during the same year. On June 1, 1902, the whole of the first half of the line, as far as Weihsien, was opened for freight and passenger traffic, and on June 1, 1904, the whole line, including the Poshan branch, was opened.

Cost of Construction.—The entire cost of construction and equipment of the railway was 52,901,266 Marks.

THE COAL AND ORE PROPERTIES

The coal mines of the Shantung railway are situated at Fangtze, 178 kilometres from Tsingtao, on the main line, and at Tzechwan, on the Poshan branch.

At Chinlinchen, 290 kilometres from Tsingtao, on the main line, there are extensive and rich deposits of magnetic iron ore, which are now beginning to be worked.

Other coal fields and ore deposits, for which the Company hold concessions, have only been located and prospected.

Fangtze Coal Mine.—The coal mine at Fangtze has three shafts, with an average depth of 250 metres. The equipment includes one large repair shop, with foundry and saw mill; one coal separator and loading station; one coal washer, with a capacity of 80 tons per hour; and one briquette machine with a capacity of 30 tons per hour. In Fangtze there are employed 25 Europeans and about 2,000 Chinese. The greatest yearly output was reached in 1910 when 273,354 tons were raised. The coal is of the same character as the Japanese gas coal and is used in the interior chiefly for household and locomotive consumption.

THE TSINGTAO-TSINANFU RAILWAY.—The Taku-ho bridge

The Tzechwan Coal Mine.—At the Tzechwan mine there are at present three shafts in service, the greatest output of which is 250 tons per hour. The average depth of the shafts is 260 metres. The equipment is much the same as at Fangtze, with the addition of a large electric installation. Thirty Europeans and about 5,000 Chinese are employed. The highest yearly output was reached in 1912, when 360,000 tons were raised. In 1913 the output is expected to reach 400,000 tons. The coal from this mine is half-soft and of the same character as Cardiff coal. It is much in demand for naval and merchant ships.

THE TSINGTAO-TSINANFU RAILWAY.—Second class station at Tsongtschowfu

THE SALT INDUSTRY IN KWANTUNG

The whole extent of the salt fields which are devoted to the manufacture of salt in Kwangtung Territory measure about 2,800 *cho*, of which the Nippon Salt Manufacturing Company owns 1,000 *cho*, the Manchuria and Korean Salt Manufacturing Company, 600 *cho*, Suzuki & Co 80 *cho*, the remaining 1,000 *cho* being under the management of natives. The total amount of annual yield from these salt fields reaches as much as 200,000,000 lbs.

The salt manufacturing business in Kwangtung Province is a natural industry special to the province, and accordingly comes foremost among the other industries. The Government-General of Kwangtung is striving to encourage this branch of industry and the companies themselves are making great efforts for the expansion and development of the manufacture. The salt manufactured in these fields is expected to be sold to the Salt Office at Mukden from next year, and it is reported that negotiations have already been started for that purpose. Then at least forty or fifty thousand million pounds of the manufactured salt will be forwarded to Mukden province. The Nippon Salt Manufacturing Co., and the Manchuria and Korean Salt Manufacturing Co. are now hard to work in preparation for the extension of the salt fields.

It is reported that the new salt fields of the Nippon Salt Manufacturing Company cover an area of over one hundred *cho*. They have been under construction since last spring and will be completed by the early part of December.

The Nippon Salt Manufacturing Co. was to hold a general meeting at the end of November, when a dividend of 5 per cent. was to be declared.

THE CHEFOO BREAKWATER

Mr. Liedt-tede-Jende, the engineer who is to draw up a scheme for the forthcoming breakwater, has arrived in Chefoo. He is accompanied as Assistant, by Mr. von Exter.

The amount of the extra duties levied specially for the construction fund for the month of September last totalled Tls. 11,700, showing an increase of Tls. 2,100, over the previous month.

THE FAR EASTERN REVIEW

COMMERCE :-: ENGINEERING :-: FINANCE

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SHANGHAI AND MANILA, NOVEMBER, 1913

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THE MONTH

Politics and finance in China as usual occupied most attention during November. These subjects are dealt with exhaustively elsewhere, and it is hardly necessary to supplement that article beyond recording that on November 26 a manifesto was issued convoking the Administrative Conference. This manifesto did not define very clearly the functions of the Conference; the most precise statement made by the President being:— "The delegates shall contribute their knowledge and assist in the administration so that the country may be placed on a solid rock-like foundation, firm and immoveable, and the expectation of the people to see an age of prosperity may be realised. I have great hopes therein."

With the President's hopes all will sympathise, but it must be admitted that prosperity still coyly hides behind the curtain of the future. Business both internal and external has been in an absolutely parlous condition, and pessimism is becoming the prevalent note in both foreign and Chinese business circles. Some doubt is beginning to be expressed in certain quarters as to whether less severity on the part of the Government would not be opportune at the present. It is suggested that the stagnation of trade is largely due to the fear that the punitive methods being employed to preserve the peace may in the event prove to be the cause of its breach.

Turning from politics it is to be noted that there has been a crop of rumours in regard to provincial and other loans. In connection with the rebuilding of Hankow four different syndicates have been credited with securing the right to provide the money. The negotiations with the Quintuple Group for another large Central Loan have been proceeding, but no definite result has as yet been achieved. The revenue from the Salt Gabelle, however, has been coming in splendidly, and Mr. Chang-hu, who is associated with Sir Richard Dane in its administration, speaks very hopefully in regard to the future.

The most important happening in regard to foreign affairs was the conclusion of the Russo-Chinese Agreement regarding Mongolia, which was signed on November 5. Desultory fighting with the Mongolians continued throughout the month, and owing to the Chinese being defeated within easy distance of Kalgan, that centre has been placed under martial law. No definite news has been received of the progress of the negotiations in India between representatives of China, Great Britain and Tibet, but from the fact that the negotiations have been so lengthy it is clear that considerable difficulty has been experienced in finding a solution of the knotty problem of Tibet's future status.

Railway matters has supplied no sensational development. The Sinyang-Pukow Railway Loan Agreement was duly signed, and it is understood that no time will be lost in beginning the construction work. Important conferences in regard to railway matters have been held in Peking, in which both foreign and Chinese technical representatives took part. Much good is expected to ensue from these interchanges of views. Other matters in connection with railways are referred to elsewhere.

CHINA'S RAILWAY ACCOUNTS

The inauguration of a conference to devise a uniform system of accounts for China's railways is a forward movement which raises a distinct hope that soon there will be a general effort made to introduce all round standardization, as has been urged by this journal for many years. A unification of accounts and statistics is more than the thin end of the wedge, if it can be carried into effect, but the peculiar nature of the methods by which China's railways have been constructed make it difficult of accomplishment unless the various banks interested in the financing of the lines and the high administrative authorities connected with the Board of Posts and Communications are heartily in accord with the members of the Conference who have the subject in hand. For the great good of the country it is sincerely to be hoped that both these important factors will see eye to eye with those who are striving to find a way out of the mystifying maze into which railway accounting in China has drifted. What the Conference is hopeful of doing now is to prepare a carefully devised but simple classification so that reports made by the various roads to the Government may be uniform and useful, implying, of course, uniform procedure in the use of the reports by the various offices quite as much as uniform accounting by the various auditors. Mr. Yih Kung-chao, the Vice-Minister and Director General of Railways, is the Chairman of the Conference, and this augurs well for the adoption of the reports which it is likely eventually to make under the active leadership of Dr. Henry C. Adams, of the American Interstate Commerce Commission, and Dr. C. C. Wang, the Vice-Chairman of the Conference, the man to whose energy its creation is due. The first meetings of the conference, referred to elsewhere in this issue, passed off harmoniously and successfully. Dr. Adams showed great discretion in addition to his special knowledge and experience, and rendered considerable assistance to the Conference, while the accountants from the various railways exhibited an enthusiasm for results of a workable character which is gratifying to all who look for loyal and co-operative action among those who have put their hands to the plough in China. The efforts of the members of the Conference, especially the advisory-members, to bring about this unification deserve every attention.

and no doubt the high authorities in the Government will see to it that the report which will ultimately be prepared will speedily be accorded the favorable consideration which it will deserve.

A RAILWAY CLEARING HOUSE

We invite the attention of the Commission for the Unification of Railway Acounts to the urgent necessity for considering the establishment of a Railway Clearing House for China. In the United Kingdom for instance a Railway Clearing House has carried on operations for three decades with signal success, and the inauguration of the system in China before the volume of railway business assumes larger proportions would be a wise and prescient measure. It may be as well to explain briefly the functions of the Clearing House in the United Kingdom. In that country passengers and goods have in very many cases to travel over lines belonging to different companies. It is necessary, therefore, to determine what proportion of a fare or freight charge should be credited to each company. Obviously for each company to make the necessary inquiries and researches would mean the provision of a special staff. If the fare or freight charge affected five different lines, the work would be performed by five different staffs. This waste of time, labour and money is prevented by the work being undertaken by the Clearing House, an independent concern, the findings of which can be accepted by all the companies interested as impartial. To explain the method by which the work is done would occupy too much of our space, but it may be mentioned that the Clearing House not only ascertains the amount due to each company for fares and freight charges, but also keeps track of the rolling stock which runs over more than one system and adjusts the charges for demurrage and so forth. The necessity for a Clearing House in China is already felt. Let us suppose, for the sake of example, that a package is consigned from Shanghai to Peking. It has to pass over the Shanghai-Nanking line; the southern section of the Tientsin-Pukow line; the northern section of the same line, and finally over the Peking-Mukden line. The authorities of each of these lines have to work out the amount due for their proportion of the haulage, and if there is any dispute a final adjustment may not be made until much time has been lost in correspondence. A vast amount of unnecessary work would in any event have been performed. No one authority is likely to accept the finding of an interested party without verification, but a Railway Clearing House on the other hand is entirely disinterested and its decision can be accepted without demur or examination. In regard to the supposititious package from Shanghai to Peking, if there were a Railway Clearing House in operation in China there would be no need for the four authorities concerned to do anything further than see that the package was carried safely and promptly to its destination.

There is no need further to emphasize the advantages that would attend the establishment of a Railway Clearing House in China. Every year the volume of business passing over connected systems will increase and, unless provision is made in good time, the authorities of each line will have to maintain a large and over-growing staff to do work that would be better and more economically performed by an impartial body. We commend this matter to the serious and immediate attention of the Government and the Commission, and suggest that the immediate inauguration of the system under some official who has special knowledge of the subject would be most conducive to the interests of the Railways of China—perhaps her best asset.

RUSSIA AND THE FAR EAST

Some little time ago when there was great uncertainty in regard to the upshot of affairs in the Balkans, it was thought that Russia would have very little time to devote attention to Far Eastern matters. However, she certainly found time to pursue her policy in reference to Mongolia to the logical conclusion. Also she has steadily pushed on with the construction of the Amur Railway, and it has been announced definitely that the opening of through traffic on the central section of the Railway has been fixed for the autumn of 1914. The entire Eastern section, it is anticipated, will be finished some time in 1915.

A double track is being laid from Vladivostok to Nikolaeivsk (the Ussuri Railway). A sum of Roubles 85,000,000 has been appropriated with this work, and a contract for driving the first tunnel at Kaparisov has been let for Rs. 3,800,000. A second contract for a large tunnel at Nadgenska, which is estimated to cost Rs. 5,500,000, was to have been let during November and other contracts are to be signed in the near future. Besides double tracking the line the alignment is to be straightened. The expensive tunnels referred to will greatly shorten the distance and in every way improve the line.

At Vladivostok, important port improvements are under way. This work is being undertaken by the Government. Wharves are being built and godowns (for both cold and warm storage), grain elevators and general wharfage facilities are being provided. This marks the first genuine effort of the Government to make Vladivistok anything but a purely military fortress. A great enlargement of trade is expected to result from the recent settlement of the Ussuri and Amur provinces and the completion of the Amur Railway.

A further indication that Russia is certainly not slackening off in her activities East of Baikal is the announcement that a new railway is to be built from Khabarovska on the Amur to the Imperial Harbor on the Japan Sea. The Imperial Harbor is the best harbor north of Vladivostok, and like Vladivostok is accessible throughout the year for any vessels. In the past some logs have been exported from this harbor to Australia, and it has been of great importance to the development of the fish industry in these seas. This line will open up an entirely new country, well timbered and containing some minerals. The tunnel through the main dividing range will be of considerable length. Construction will be begun next spring, and the necessary financial appropriation has already been made by the Government. Imperial Harbor is the natural terminus of the Amur Railway. The Committee of the Duma has passed the bill relating to the construction of railway from Werchne Udinsk to Kiakhta.

The foregoing seems to show that Russia is not so preoccupied by European affairs that she cannot make timely provision for future development in the Far East.

MINING IN CHINA

The Minister of Industry and Commerce is devoting considerable attention to mining matters, and a statement was issued towards the end of the month by the Ministry calling attention to the country's great mineral wealth. Reference is made to the fact that throughout China there are no more than five mining enterprises with a capital of $10,000,000 and five with $1,000,000.

The statement then continues: Firstly, although good mining laws are necessary, good men to enforce them are also required. The statement instances Japan and suggests the establishment of special departments in all provinces on lines similar to the Japanese system.

Secondly it refers to the aversion of Chinese capitalists to invest money in mining enterprises and assumes that foreign capital is necessary, but states that restrictions should be placed on such capital.

It is also considered that foreign interests should not exceed forty per cent. Thirdly, the statement points out that Chinese owning land containing minerals have always shown a disposition to prevent its being opened up or to demand an excessive share of the profits.

It therefore hints that the Government must be the acknowledged owner of all mining properties similarly to foreign countries and that the Government will draft regulations by which the owner of the land and the prospector will each secure a fair share of the profits after paying the Government a moderate royalty.

It is reported that Mr. Yang Tsu-chi has been appointed President of the Chinese Board of Directors of the Sino-Japanese Syndicate.

CHINA, RUSSIA AND MONGOLIA

TEXT OF THE AGREEMENT

The Mongolian Agreement between China and Russia was signed on November 5 by Mr. Sun Pao-ki and M. Kroupensky. Following is the text of the Agreement:—

I.

Russia acknowledges that Outer Mongolia is under the suzerainty of China.

II.

China recognizes the autonomy of Outer Mongolia.

III.

Recognizing the exclusive right of the Mongols of Outer Mongolia to provide for the internal administration of autonomous Mongolia and to settle all questions of a commercial and industrial nature touching their country, China engages not to intervene in these affairs, and consequently will not send troops into Outer Mongolia, nor establish any civil or military official therein; and will abstain from colonizing the country. It is, however, agreed that a dignitary sent by the Chinese Government may reside in Ourga accompanied by a necessary staff and an escort. Moreover, the Chinese Government may, in case of need, station, in certain localities in Outer Mongolia to be defined during the negotiations provided for in article V of the present agreement, agents for the protection of the interests of its citizens. Russia, on her side, engages not to maintain troops in Outer Mongolia, except consular guards; nor to intervene in any phase of the administration of the country; and engages to abstain from colonizing it.

IV.

China declares herself disposed to accept the good offices of Russia for the purpose of establishing her relations with Outer Mongolia in conformity with the principles hereinabove announced and with the stipulations of the Russo-Mongolian commercial protocol of October 21, 1912.

V.

The questions which relate to the interests of China and Russia in Outer Mongolia and which have arisen from the new state of things in that country shall constitute a subject of subsequent negotiations

In witness whereof the undersigned, duly authorized for the purpose, have signed the present Declaration and have thereunto affixed their seals.

Done in Peking in duplicate the fifth day of the eleventh month of the second year of the Chinese Republic, corresponding to October 23 or November 5 one thousand nine hundred thirteen.

(Signed) SUN PAO-KI.
B. KROUPENSKY.

On proceeding to sign the Declaration bearing the date of to-day relative to Outer Mongolia, the undersigned Minister of Foreign Affairs of the Chinese Republic, duly authorized to this effect, has the honor to declare, in the name of his Government, to His Excellency Monsieur Kroupensky, Envoy Extraordinary and Minister Plenipotentiary of His Majesty the Emperor of all Russia, as follows:

1—Russia recognizes the territory of Outer Mongolia as forming part of the territory of China.

2.—Concerning questions of a political and territorial nature, the Chinese Government will put itself in agreement with the Russian Government by negotiation in which the authorities of Outer Mongolia will take part.

3.—The negotiations provided for in article V of the Declaration will take place among the three interested parties, who will designate for this purpose a place for the meeting of the delegates.

4.—Autonomous Outer Mongolia will comprize the regions which have been under the jurisdiction of the Chinese Amban of Ourga, of the Tartar General of Uliasoutai and of the Chinese Amban of Kobdo. Seeing that there are no detailed maps of Mongolia and that the boundaries of administrations of the country are indefinite, it is agreed that the exact boundaries of Outer Mongolia as well as the delimitation of the line between the district of Kobdo and the district of Altai will constitute a subject of subsequent negotiations provided for in Article V of the Declaration.

The undersigned seizes this occasion to renew to His Excellency Monsieur Kroupensky the assurances of his very high consideration.

(Signed) SUN PAO-KI.

A statement in similar terms was made by M. Kroupensky.

Mr. Chang Chien, Minister of Industry and Commerce

COMMISSION TO UNIFY RAILWAY ACCOUNTS.

The Commission on the Unification of Railway Accounts began its first session at 10 a.m., on the 19th November in the Ministry of Communications, Peking. The conference lasted four days. The members present were:—

Chairman: Mr. Yih Kung-chao, Vice-Minister of Communications and Director-General of Railways; *Vice-Chairman:* Dr. C. C. Wang; *Adviser:* Dr. Henry C. Adams; *Advisory Members:* Messrs. W. Henderson, C.A., H. Middleton, H. Brickner, B. Bellion, F. Y. Chen, T. Cheu, Y. T. Tseng and H. C. Lee; *Members:* Messrs. K. S. Tsang, J. T. Zhen, C. P. Yin, C. S. Liu, S. F. Yih, Souen-Souen; *Assistant Members:* Messrs. C. K. Tsao, H. Y. Chen, L. Ho. T. C. Ma, Y. C. Ying, C. M. Chow, T. Y. Chao and S. Tchang.

The conference was opened by an address from the Chairman, Mr. Yih Kung-chao, who welcomed the members to the Ministry and wished them every success in their labours. He described the Commission as being like a ship bound for a destination which could be reached by a number of routes, and that it did not matter which particular route was taken as long as the desired point was reached. The object of the Commission was to get to a point to secure unified forms of procedure in accounting, and it did not matter which method was taken as long as the point was gained. He understood that the meeting represented the different systems of Railway Accounting, and by combined effort a definite classification should result. A unified system was wanting and the Commission must form such a system. He regretted very much having the duties of the Vice-Minister of Communications to perform, as they prevented him being present at all the meetings. In his absence he wished to depute Vice-Chairman, Dr. Wang, to act on his behalf. He then left the conference in charge of the Vice-Chairman, Dr. Wang, who conducted the meetings throughout.

The conference progressed very rapidly. The Bye-Laws regulating the Commission were drafted and accepted at the first session.

Owing to the fact that new lines may be constructed in the near future, the Commission decided to take up the Construction Accounts previous to doing

(*Continued on page 230*)

PEKING-KALGAN RAILWAY.—The new quarters at Nankao for employees.

PEKING-KALGAN RAILWAY

The reports of the working of the Peking-Kalgan railway for the second half of 1912 shows a gain in earnings of Mexican $221,424.46 over the returns for the similar period of the previous year. The figures are as follow:—

	1912	1911
July	$150,509.17	$104,213.37
August	164,771.34	136,966.77
September	154,724.50	167,488.84
October	192,764.73	118,946.23
November	108,131.40	184,312.67
December	224,708.92	152,257.80
	$1,085,610.15	$864,185.68

The increase shown in this table is $221,424.46, but there is still a surplus derived from half-fares which does not appear in the above comparison, and which is as follows:—

1912	1911
$45,662.70	$142,809.70

Gross total	$1,131,272.49	$1,006,995.38

The above amounts were made up as follows:—

Passenger fares	$261,730.40
Freight	770,409.57
Half-pay fares	45,662.70
Miscellaneous receipts	53,461.18

The traffic returns show that 254,279 passengers were carried during the six months, and 220,393 tons of freight, in addition to 83,591 tons of official material—a total of 312,084 tons.

The train miles run were 209,637.

The report lays particular emphasis upon the difficulties caused by an insufficiency of goods cars, stating that "in the first term of 1912 the management submitted a statement to the Board of Communications showing what freight was being carried and what cars were necessary to cope with the increasing business. Owing to the scarcity of cars raw products showed no increase in the months of July, August and September, although there was an increased demand for transportation facilities. Losses were being sustained owing to the lack of cars to meet the demands for local and foreign transportation. An attempt was made to borrow cars from the Peking-Hankow and Peking-Mukden Railways but the request could not be complied with owing to a shortage of cars on both those lines. Cars were ordered from the Tongshan works but though the time of delivery had expired no cars had been delivered. If the Tongshan works could make the delivery the freight would show a great increase."

In the report on railway maintenance it was shown that much building work had been gone on with. An eight-roomed brick house was built for the Traffic Dept.; brick quarters containing 50 rooms were built were the Loco. Dept.; a four-roomed stone house was built for the Engineering Dept. At Nankao a brick loco. shed, 250 feet in length, houses for the Loco. Dept., quarters containing 56 rooms for the staff, as well as store-houses, and police station containing sixteen rooms, in addition to a car shed 135 feet long were erected. A loco. shed 96 feet long was also built at Kangchuang, whilst another one was erected at Kalgan 200 feet in length. The platforms at Hsin huayuan, Shahe, Ching-lo and Shelingtzu were prolonged 100 feet each. Much work was continued on the retaining walls at various points on the line.

The Changsui Extension.—The extension of the line from Kalgan to Suiyuan—or that part of it opened to traffic—was taken over by the Board of Posts and Communications in April, 1912, the returns for the last half of the year being as follow:—

July	$26,772.45
August	28,687.47
September	17,343.97
October	20,017.22
November	30,791.94
December	51,146.61
Total	$174,759.66

The earnings were divided as follow:—

Passenger fares	$ 46,804.00
Freight	123,950.67
Miscellaneous receipts	4,005.09
Total	$174,759.66

The first, second and third class passengers numbered 42,314. Freight totalled 35,168 tons, in addition to 2,347 tons of official material.

THE PROPOSED SINYANG-PUKOW RAILWAY

On October 27 the Senate at Peking gave its approval to the signature of the agreement for the proposed railway to connect the Tientsin-Pukow and the Peking-Hankow railways, and on November 14, the agreement was signed between the Chinese Government and the Chinese Central Railways Limited, of London, the concessionaires.

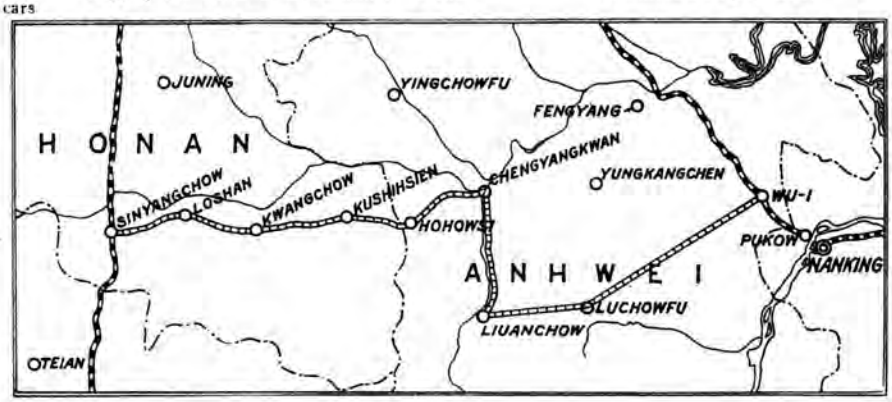
The proposed railway is one of the four concessions granted in 1898 and 1899 by the Chinese Government to the British after the Peking-Hankow concession had been given to the French and the Belgians. The other three were the Shanghai-Nanking, the Canton-Kowloon, and the Shanghai-Ningpo railways.

The preliminary agreement for the Pukow-Sinyang railway was made in January, 1898, on the understanding that the signing of the final agreement should await the completion of the final agreement for the Shanghai-Nanking railway and be drawn up in similar terms. The Boxer trouble, the South African war, and the Russo-Japanese war contributed to long delay, and it was not till 1903-4 that the Shanghai-Nanking railway agreement was settled. By this time it was decided that the Pukow-Sinyang railway agreement could not be taken into consideration until the Tientsin-Pukow railway agreement had been dealt with, and four years expired before that was accomplished. That agreement was completed in 1908, but the Chinese Government then decided that the construction of the Tientsin-Pukow line was desirable before concluding matters for the building of the cross country railway. A further four years passed, and it was not till 1912 that the Government resumed negotiations for the completion of the agreement connected with the outstanding concession.

Mr. Shun Yen-pei was, in 1912, appointed commissioner to negotiate, and Mr. T. J. Bourne, who has had long experience in China, was in 1913, designated as the Engineer-in-Chief of the proposed line and was commissioned to make a survey to determine the location of the line.

Mr. Bourne selected a route running between Wu-I, about twenty miles north of Pukow, and Sinyang, the country to be traversed being under heavy cultivation, but without any other communication or means of transport than cart roads. The movement of crops and local produce is entirely dependent upon cart transport, a slow and unsatisfactory method. The railway will cross the wealthy Ho-fei district, where the great landed estates of the Li Hung-chang family are situated, and in addition to prospects of heavy grain traffic it is hoped that the coal deposits, known to

(*Continued on page 233*)



TIENTSIN-PUKOW RAILWAY (SOUTHERN SECTION)

THE LINE AND THE REBELLION

Very little has been heard of the actual situation that existed in regard to the Southern Section of the Tientsin-Pukow Railway during the exciting days of the rebellion in July. It was known that the engineers and staff generally had had a most trying and anxious time, but the public generally had no idea of the dangers and difficulties that were undergone in endeavouring to preserve the property of the railway. Railwaymen are notoriously averse to publicity, and they shrink from emphasising the importance of their personal efforts in times of stress. As a result it is difficult to get them to speak of the part they played in affairs such as the recent rising, and when information is obtainable it is usually in the form of a tersely-expressed official report. In this little reference is made to the devotion to duty, courage and ready resource shown, but to those who can read between the lines these are clearly apparent. We have seen copies of reports supplied to Mr. Chao Ching-hua, then the Associate Director of the Southern Section of the Tientsin-Pukow Railway, by Mr. A. R. J. Hearne, Acting Engineer-in-Chief and by Mr. J. Alston, Local Superintendent, which show that really excellent work was done.

The then Associate Managing Director, Mr. Chao Ching-hua, rendered important services to the Government during the rebellion, and this has been recognised by his promotion to the post of Managing Director of the whole Tientsin-Pukow line, and the bestowal of the 4th grade of the Wenfu decoration. At the beginning of the outbreak at Nanking he was called upon by the Ministry of Communications to follow the Government army and to attend to the work in connection with the transportation of troops and munitions. With some of his staff he lived in railway cars travelling from station to station for nearly forty days. During the first half of this period he was busy with the engineers in connection with the work of repairing the Kuchen Bridge and other parts of the track that had been damaged. During the later half he remained mostly at Puchen looking after the rolling stock, most of which was at that time in the hands of military officers. In consideration of his work General Feng Kuo-chang appointed him Inspector-General of the 2nd Army. Mr. Chao returned to his office at Shiakwan on September 2, the day after the capture of Nanking. It may be remarked that the railway property at Shiakwan did not suffer in any way during the outbreak.

Mr. Chao Ching-hua is a native of Chekiang Province, and was educated in the Diocesan School, Hongkong. After pursuing advanced studies in the Chinese Government Telegraph College of the Two Kwang (Kwangtung and Kwangsi Provinces) in which he was graduated, he entered the service of the Telegraph Administration. In 1896, he proceeded to Tientsin, where he joined Mr. Bohr, the Chief Superintendent of Telegraphs at that port as the latter's secretary. He did not stay long in the service of the Telegraph Administration, as in the following year he entered the service of the Chinese Government Railways and was made secretary and translator to the Head Office of the Tientsin-Lu Kou Chiao (Peking) Line, and the Lu Kou Chao Paoting Fu Line (the first section of the Peking-Hankow Line built by British engineers). Ever since he has been closely connected with railways in China, holding different posts of responsibility in various railways.

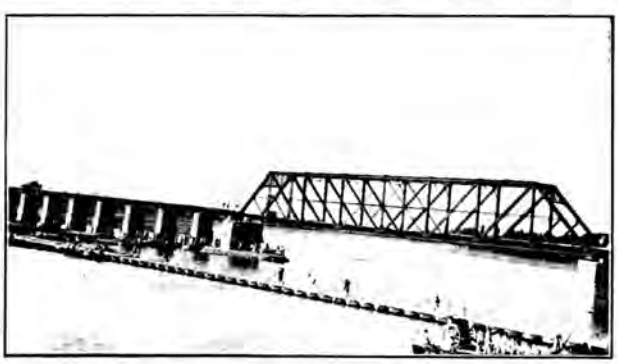
Mr. Chao Ching-hua, Managing Director of the Tientsin-Pukow Railway

After the Boxer trouble in 1900, he was again active in railway concerns, and during 1905 and 1906 he undertook very heavy constructional works on the Shanghai-Nanking Railway. To carry out the works contracted by him, he had to import 2,000 trained labourers from Tientsin and Honan Province, a feat which he successfully accomplished. The rail-laying from Shanghai to Nanziang was started by him and also earthwork on the workshop yard and buildings at Woosung.

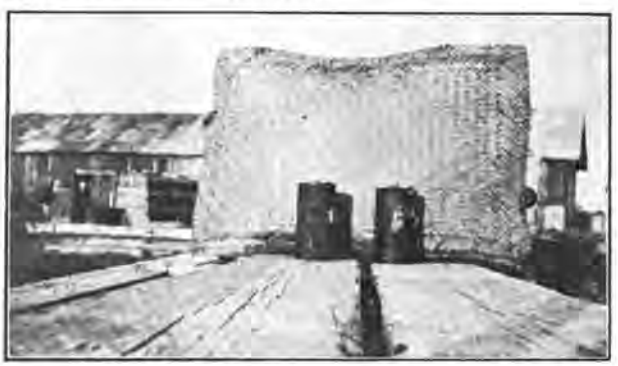
In 1907 when Mr. Tang Shao-yi was Director General of the Five Government Railways, Mr. Chao was entrusted with the dual posts of secretary and auditor to Mr. Tang, but he was subsequently transferred to the Board of Communications in Peking where he held various responsible posts, mostly in connection with railways and prior to his appointment as Managing Director of the Canton-Kowloon Railway, he was the first secretary in the Foreign Department and also in charge of the Audit Department of the Directorate General of Railways, to which posts he was promoted in 1909.

On the tour of inspection of the northern section of the Tientsin-Pukow Railway by the Deputy General and of the Canton-Kowloon Railway by the Director General, Mr. Chao was selected as secretary and accompanied the two officials through their inspection. Before he went to Canton, he was deputed to inspect and report on the Southern section of the Tientsin-Pukow Railway.

From the end of 1910 until November 1912 Mr. Chao was Managing Director of the Canton-Kowloon Railway. He was the special delegate from the Chinese Government in the negotiations with the Government of Hongkong for an agreement for working the Chinese and British sections of the railway, which duty he performed with marked ability. When he left to take up his post at Pukow he received several presentations from his foreign and Chinese colleagues.



View showing Kuchen Bridge after dynamite explosion on South Pier and work showing progress on temporary foundation.



View showing dynamite in drums used by the Rebels for blowing up bridges on Tientsin-Pukow Railway, Southern Section. Those in photograph taken off Pengpu Bridge after Rebels had been persuaded not to blow up Bridge. The Engineer-in-charge took up two *li* of track on North side of Bridge to compensate.

View showing temporary repairs to Bridges at mile 136.

One 30 ft. span destroyed.
One 20 ft span destroyed.
One pier destroyed.
One abutment badly damaged.

Acting Engineer-in-Chief's Report

Mr. A. R. J. Hearne reported :—

The Rebellion broke out on the 15th July, 1913, the first intimation given being the occupation of Pukow, and Hsu Chow Fu by Rebel troops and a Military proclamation to say that the Tientsin-Pukow Railway Southern Section was under martial law, and all Railway employees were ordered to remain at their posts.

I called at the Head Office on the 16th July to get what money there was in order to pay off as many men as possible and to arrange for sufficient funds to keep the line going on a purely maintenance basis.

Not knowing how long the trouble would last, I determined to stop all construction work, so issued instructions to all engineers to cut down their staff to the minimum, leaving only sufficient for the safety of the track. These orders were carried out immediately.

In the meantime troops were pouring into Pukow from Nanking and entraining for Pengpu, Hsu Chow Fu and Li Kwo Yi.

On the 17th July the outposts of the Rebel Army came into touch with the Government Forces near Hanchuang, and from that date till July 20th, engagement after engagement was fought mostly on the Railway or its immediate vicinity, the Government troops eventually driving the Rebels back into Hsu Chow Fu.

As the rebels retreated from Hanchuang to Hsu Chow Fu they destroyed the following bridges :—

1—20 feet span at mile 232.3/4
1—20 " " " " 226.1/4
1—20 " " " " 220
1—30 " " " " 219

The piers and abutments in connection with the above were badly damaged, dynamite being used in large quantities.

Also station buildings at Li Kwo Yi, Liuchuan, and Maotsun and all platelayers' houses seriously damaged, all wood work being destroyed, electric staff and telegraph instruments damaged or carried away bodily.

On July 22nd, rebels received orders from General Pah Wen Yu to evacuate Hsu Chow Fu, and during the whole day about 12 trains left en route to Nan Hsu Chow, Kuchen and Pengpu, and on the morning of 23rd July, Hsu Chow Fu station was dismantled, and the last of the rolling stock taken southwards.

I saw Mr. Ridgway personally on the night of 21st and gave him instructions to remain at Hsu Chow Fu until the Government troops occupied the place, when he was to start temporary repairs to damaged bridges and track as far as possible with the men and materials at his disposal.

Mr. Ridgway was seriously hampered by want of transport facilities, and only managed to get the Maotsun Bridge repaired temporarily when the trains from the north arrived, the bridges north of Maotsun Station having been attended to by the northern section engineers, who preceded the Government troops with a construction train with materials and men.

Between the 22nd and 28th July the rebels evacuated the line down to Kuchen, blowing up the following bridges en route :—

1—30 feet span at mile 198.3/4
1—20 " " " " 185.1/2
1—30 " " " " 136
1—30 feet span and 1—200 feet at Kuchen mile 135.

All stations north of Kuchen were treated in the same way, that is to say dismantled and staff compelled to leave.

The Rebel Army had concentrated all their forces by this time at Pengpu, and also had the whole of the southern section Rolling Stock with them.

View showing effect of dynamite explosion to 30 feet span bridge at mile 136.

I had grave fears as to what the troops intended doing to the Huai River Bridge at Pengpu and sent for Mr. Connell to come up from Puchen to assist Mr. Aries. The bridge was patrolled by railway employees night and day with instructions to let the engineers know if any dynamite were being carried on to it, and I arranged with Mr. Aries that he was to do everything in his power to stop the rebels from blowing up the bridge. I could not stay at Pengpu myself as I had an urgent wire from the Associate Managing Director from the Board of Posts and Communications, Peking, on the 28th July to proceed north via Shanghai, Tsingtao, and Tsinanfu to take over the repairs to track from Mr. Dorpmuller.

I left at once for this purpose, and on the 29th July heard that an attempt had been made to blow up the Huai River Bridge, but owing to the strenuous objections raised by Mr. Aries, the officer commanding the rebels agreed not to do so, provided the engineers pulled up two li of track north of the bridge, which was done.

Arrived in Shanghai on 30th July to find it impossible to get a boat to Tsingtau till the 2nd August, and taking into consideration that the line would be terribly congested from Tientsin with troops, decided to abandon this scheme and attempt to get North via our own line, risking being stopped by rebels.

Left Shanghai on 2nd August by special train and motor trolley, arrived Nanking the same night, left Pukow on 3rd August by special, and owing to a mistake made by the Rebel Commander at Lin Huai Kwai (where the head quarters of the Army was stationed) my train was allowed to proceed. Arrived at Pengpu at 4 p.m. to find the station occupied by the advance guard of General Feng Kuo Chang's Army. Two engines were lying in yard seriously damaged ; in fact useless, owing to a collision, and 10 empty cars.

Repairs had almost been completed to the two li of track north of the Huai River Bridge, so after collecting the empties continued to Kuchen and arrived at 7. p.m.

The northern section engineers, under Mr. Dorpmuller, had just started filling in rubble for temporary foundations.

I took over the work on the following morning, 3rd August, and wired the Associate Managing Director, who was at Nan Hsu Chow supervising the transport, and he arrived at same afternoon. Mr. Aries and Connell also arrived from Pengpu to assist in repairing the bridge.

In an interview with General Feng Kuo Chang and the Associate Managing Director, I promised that the bridge would be opened for traffic in ten days, and this was carried out.

Technical details with regard to damage and repairs of Kuchen Bridge given separately at the end of report.

From 4th August very little happened on the line except that the rebels gradually retired, followed by Government troops until on 13th, the former retired into Nanking City and the lattter occupied the reminder of the railway up to Pukow Wharf.

The bombardment of Nanking started on 14th August. General Feng Kuo Chang posted two batteries of artillery at the Pukow Wharf Tank house and three batteries on the hills at Puchen, one of which was immediately above and behind the Engineers' Quarters, and during the 10 days' bombardment the Engineering and Locomotive Department staff remained at their posts, although under shell fire during the whole period.

View showing damage done to Kuchen Bridge after dynamite explosion.

View showing group: Associate Managing Director, acting Engineer-in-Chief, Engineers and staff on Military pontoon bridge at Kuchen.

View showing damage done to 200 feet span, 30 feet span and Pier at Kuchen Bridge after dynamite explosion.

Nanking was captured on 1st September.

The steam launch service being maintained with the hulks and warships was of great value, as it ensured supplies of provisions and delivery of mails during the bombardment.

Considering the number of shells fired from Lion Hill and the Mud Forts in Hsia Kwan, at Pukow Wharf and Puchen very little damage was done to railway property comparatively; the hulk Ariel had several shots through the superstructure and one through the steel pontoon fortunately above water level, No. 2 godown riddled, water column wrecked, tank house damaged, and new running shed badly hit, 18 rails on main line were cut through and damaged.

The signal apparatus at every station on the line damaged and the majority of points at passing loops.

Fencing at stations where troops were stationed were more or less destroyed, the slats being utilised for firewood and picketing pegs.

All station buildings suffered from broken windows and the majority from wood work being destroyed.

A number of staff and telegraph instruments damaged.

I cannot say enough for the loyalty of the engineers and staff under me and the work they carried out under the most trying circumstance in order to keep the line in running order.

The Kuchen Bridge

In reference to the Kuchen Bridge at Mile 135, Mr. Hearne reported:—

This bridge is the largest and most important of those destroyed during the Rebellion (July 15 to September 1st, 1913) and the following is a short account of the temporary repairs.

Kuchen bridge carries the railway over the Hwei Ho, is 923 feet 3 inches long, and from South to North consists of seventeen 30-foot spans, one 200-foot span and four 30-foot spans on the North side.

The 200-foot span is of the through pratt type divided into eight bays, the smaller spans are bridged by deck plate girders.

View showing damage to Pier and East Girder of Kuchen Bridge also temporary foundations carried above water level.

Dynamite was placed by the rebels on the south pier of the 200-foot span and exploded by electricity, with the result that the top of the pier was badly damaged, chiefly on the east side, the fixed bearings of the 200-foot span blown into the river, and the west girder jumped off the roller bearings on the north pier

The west girder fell 2 feet, fortunately on to the only part of the pier that was left solid enough to take the weight, but it had to support the east girder by means of the cross girders, and overhead bracing.

The end bay of the east girder was completely destroyed, end cross girder badly damaged, and separated from main girders, the rivets all being sheared.

The 30-foot plate girders, also resting on this pier, were not seriously damaged, but had dropped two feet, being held up by broken parts of the pier.

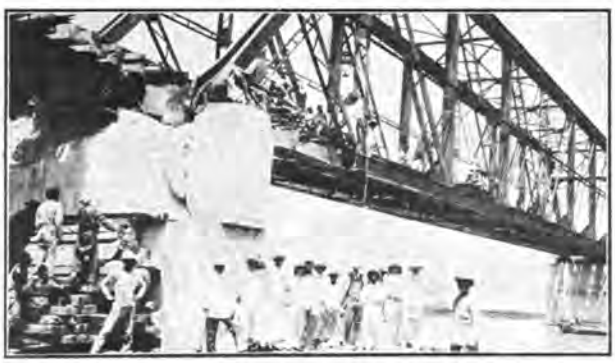
The pier is built of concrete, and as well as being shattered on top showed cracks running ten feet down from the top.

As soon as the place fell into the hands of the Government, work was started on temporary repairs to enable the bridge to be used for traffic.

Owing to the rebels occupying the line south of Kuchen the work was started by the northern section engineers, who followed the Government troops down to repair any bridges that were destroyed, however immediately the British engineers of the southern section got up the line, which was a couple of days afterwards, the work was handed over to them.

The plan adopted, consisted in filling rubble round the damaged pier till it reached a height of three feet above water level: then to construct sleeper stacks on both sides of broken pier to carry 30-foot girder on the one side, and rail bearers, and west girder on the other, a third sleeper stack, and the most important being built under the eastern girder.

The third stack has its centre 25 feet from damaged pier, and forms the new pier for the broken girder, reducing its span to 175 feet.



View showing damage to Pier and East Girder of Kuchen Bridge, also temporary rubble foundations carried above water level.

View showing train crossing Kuchen Bridge at mile 135 after temporary repairs completed. Time taken to repair, 10 days.

Next to lift girders to their proper level by means of jacks, and to bring the main girders into line, it was found that their centre line was over six inches out.

Finally to strengthen the end vertical member which would now form the end strut of the eastern girder, and which was calculated to stand a stress of 130 tons.

Night work was immediately started, the engineers taking three hour shifts to superintend the work; some idea of the magnitude of the work may be had from the fact that one thousand men were employed.

The depth of the water alongside the damaged pier was approximately five feet while forty feet out it was twenty-one feet. The bottom was soft, and consequently the rubble continually sank as the mass of stone grew larger.

The rubble was collected from the embankments at the ends of the bridge where it had been used as pitching for their protection from floods, and carried to foundation site over a bridge of boats, also a temporary track laid across damaged part of bridge facilitated matters by allowing the use of push trollies loaded with stone to be carried, and deposited where required from the bridge itself.

As soon as the foundation had been brought up to the required height, the sleeper stack under the eastern girder was put in hand: first thirteen rails were laid at one foot centres and running parallel to the girders, carefully levelled, and ballasted with two inch broken stone. On top of the rails, sleepers were laid, each one being wedged tightly and dog spiked to the one above it.

The sleeper stacks for the western 200-foot girder, stringers, and 30-foot girders were then built, no rails being used in their case, the rubble being levelled with small stones, and the first row of sleepers placed on that foundation.

The next work was the lifting of the girders by jacks, two 50-ton, and one 30-ton hydraulic, in addition to several 15-ton screw jacks were tried; unfortunately all the hydraulic jacks failed, but six 20-ton transverse screw jacks were secured from the locomotive department which proved sufficient; the transverse arrangement combined with hauling on wire rope attached to girder brought the bridge back to the correct centre line.

During the last operation the eastern girder jumped back on to its roller bearing at the north pier.

As expected the foundations sank when the weight of the girders was put on it, consequently it was decided to raise the end two inches higher than the correct level, to allow for any sinkage, either from the foundation or when trains ran over the bridge.

Once the required height was obtained the eastern main girder was wedged tightly, directly on to the sleeper stack, and in order to carry the ends of the western girder, stringers, and 30-foot girders, seventy-seven rails were used, built up in rows with heads and flangs alternately reversed, the rails resting on the sleeper stacks at each side of the damaged pier.

The last thing to be completed was the strengthening of the first vertical in the damaged east girder, which consisted of four bulb angles connected by bracing to form an I-stanchion. All these members were badly damaged by the explosion so that it was not possible to calculate its carrying power. Two 12-inch by 12 inch balks of timber were cut to fit in between the bulb angles, and outside these were placed two 10-inch by 5 inch rolled steel joists; the timber and joists being bolted together. As the top boom on one side was formed of two channels with a plate on top, it was necessary to introduce two rails bolted to a timber, and directly jutting against the bottom of the channel, the latter being packed with timber.

On the other side was the end diagonal compression member, and as timber and steel joists butted against the under side of this there was no necessary for rails. Thus the stress in the temporary strut was transferred to the vertical members of the boom.

View showing temporary rubble foundation sleeper stack. Reinforcement of 1st vertical, damaged Pier and steelwork.

The testing of the bridge was carried out as follows :—

A light engine and two cars crossed, causing a sinkage at the end of Eastern girder of 0.06 of a foot, the second test consisted of a heavy engine weighing with tender about 30 tons, followed by 12 30-ton cars fully loaded with rubble which caused a depression of 0.05 of a foot which the train was on the bridge, but the sleeper stack recovered this amount when the train had crossed.

The bridge was opened for traffic on the 11th August, exactly ten days after the work was handed over to the British engineers.

General Feng Kuo Chang immediately rushed train after train of troops, guns, and stores over the bridge en route for Pukow and the attack on Nanking.

Although instructions were given that two engines were not to cross the bridge coupled, these orders have been infringed on two occasions, and very heavy traffic has been running day and night for one month, but the total sinkage is only two inches.

The bridge is very closely watched, and readings are taken every few days in order to reduce the chances of an accident to a minimum.

View showing Kuchen Bridge after temporary repairs completed and bridge tested.

Loco. Superintendent's Report

The following is the report by Mr. J. Alston, Loco. Superintendent :

During the recent hostilities the rolling stock on the whole suffered no severe damage, but owing to the still heavy transport of troops, engines are very hard pressed and no time is available for washing out and repairs.

On the 31st July at 2.30 a.m. a down special from Lin Hui Kwan, loaded with rebel soldiers, had some waggons detached on the main line at the mile 40 North of Chang-pa-lin, owing to the soldiers attaching a rope to the pin of the waggon Janney Coupler. This rope was fastening down a tent inside a high-sided waggon, which flapped about in the breeze, and immediately the coupler slackened owing to the waggon being on the down grade the coupler pin was raised by the tent rope, causing four waggons to be detached and left on line; the night was dark and none of the train staff knew of this occurrence.

Another special train followed the above without electric staff or links,—the soldiers forcing the Station Master to make the train proceed,—this train ran into the waggons left lying on line at mile 49, without serious damage, still another train was sent on by soldiers, consisting of 120 axles, and ran right into rear of second special, knocking five waggons down the bank, killing about thirty soldiers and injuring fifty; the accident happening on a grade of 1-150 down. The rebels at this time were in full retreat from Hsu Chow-fu and in a great hurry to go south, and forced the hands of the railway staff, thus causing such a serious accident.

Five waggons were very badly damaged, Engine No. 28 badly damaged, and since then has been in workshop for extensive overhaul. Engines No. 21 and No. 31 are also damaged owing to soldiers at Peng-pu forcing the driver of No. 21 Engine to move his train when No. 31 Engine was not clear of the cross-over road. A few waggons on the line have had serious end on collisions, but these are as fast as possible being repaired in workshop.

Passenger cars have been badly treated by soldiers; in many cases all interior fittings stolen or destroyed. I have endeavoured to keep as many as possible of the best carriages in the workshop, but owing to the demand for carriages this has been nearly an impossible task; every available carriage and waggon has been working on the line.

Crane for watering locomitives at Pukow wharf was knocked down by a shell from Nanking; a new one has been made in workshop and water supply restored.

The drivers and firemen of the locomotive department have stuck to their work night and day in spite of the fact that at times they were often in very great danger of losing their lives. Driver Li King Tong was shot at by Government soldiers one dark night when approaching Chu-Chou with rebel peace representatives, and has lost the power of one of the fingers of his right hand; he was otherwise badly wounded. Workmen and clerical staff of the Department remained in Puchen throughout the siege of Nanking; the latter coming to office daily and living in one of the arches of Puchen City wall for over three weeks to protect themselves from shells.

No damage has been done to workshop, but shells burst frequently in the yard, fortunately clear of the buildings; owing to the fact that men stayed at their posts in the shops, repairs to rolling stock were executed and engines kept in running order all through the trouble.

The first intimation I had of this recent trouble was on the morning

of the 15th July, when an officer came to my office requesting that all trains to the north were to be stopped,at the same time informing me he was orderedby his General in Nanking to convey this message; in reply I said it was impossible for me to stop the trains without a written statement from some person in authority, and then I proceeded to get the engine out of engine shed at Puchen to run to No. 4 train North; this engine was stopped at works gate by about fifty soldiers, who ordered the driver not to proceed or they would fire. I then wired repeatedly all concerned to keep trains from coming south, but owing to wires being in hands of rebel soldiers this order was not carried out. All incoming trains from north ran to Pukow wharf terminus where rebels detained the locomotives with result that as many as ten locomotives were lying at Pukow without getting water and coal. I interviewed a rebel officer of some kind, pointing out what damage might occur if water in boiler went too low—no person in authority could be found—and after some delay he allowed engines to return to Peng-pu for coal and water.

The first troop special to the North from Pukow with rebel soldiers ran 10.30 p.m. on 15th July, the officers forcing the hands of the traffic staff; since then trains have been running night and day.

On the 29th July, Engineer Mr. Aries wired saying preparations were in progress to blow up the bridge at Peng-pu, and that orders could only be cancelled from Headquarters. I attempted to see General Hwang Hsin in Nanking, but found he was either in hiding or had left, and an interview was impossible, and could get no responsible person in Nanking to cancel the order *re* destruction of bridge.

I then went to Pukow and found a gentleman who represented himself to be the chief staff officer; after a long conversation I pointed out it would be to nobody's benefit if the bridge was destroyed and would handicap the railway for perhaps a year, and also informed him there were persistent rumors that General Hwang Hsin had left and hostilities had ceased; he then informed me that he would wire to Peng-pu and cancel any order for the destruction of the bridge; this wire I saw him send off before leaving. I then wired the engineer at Peng-pu that instructions has been sent informing the responsible parties not to interfere with the bridge.

Miss Chao Mei-sen, eldest daughter of Mr. Chao Ching-hua, who christened the Nanking-Pukow Ferry boat *Fei Hung*

The Nanking-Pukow Ferry-boat

In our last issue we gave a brief description of the new ferry boat *Fei Hung* built to the order of the Tientsin-Pukow Railway, Southern Section, by Mr. Nicholas Tsu The vessel was launched in October, the ceremony being performed by Miss Chao Mei-sen, eldest daughter of Mr. Chao Ching-hua, the Associate-Director of the Railway.

On November 17 a large number of visitors were taken on the *Fei Hung* to Woosung. The vessel made an excellent impression upon those who made the trip and it is beyond doubt that she will be of great convenience to passengers travelling between Shanghai and the North. Hitherto the ferry has been one of the tribulations of the journey "*via* Pukow," but this will all be altered when the *Fei Hung* takes up her running.

On the return journey from Woosung after refreshments a number of toasts were honoured. Mr. Chao Ching-hua in the course of an interesting speech said that the *Fei Hung* was ordered by the directors in view of the increasing volume of passengers making use of the connection across the Yangtsze between the Tientsin-Pukow Railway and the Shanghai-Nanking Railway. Arrangements had been made so that express train services over the Shanghai-Nanking and Peking-Mukden lines would connect direct with those of the Tientsin-Pukow line, thus assuring connexion with the trans-Siberian line for passengers leaving Shanghai for Europe, and when the new schedule came into force it would require only thirty-three hours to make the journey from Shanghai to Tientsin. The journey from Shanghai to St. Petersburg would be cut down to twelve days; to Berlin thirteen days; and to Paris and London fourteen days. As this was decidedly an improvement compared with the former time table, it was expected that it will be welcomed by people who travel from China to Europe and *vice versa*.

It was originally intended to build a bridge across the Yangtze river to connect the terminals of the Tientsin-Pukow and the Shanghai-Nanking lines, but this plan had to be abandoned because the expense would be enormous owing to the great depth of water and the sandy river bed. The directors had in contemplation the introduction of a train ferry scheme which would convey a whole train of goods and passengers across the Yangtsze, but this scheme had necessarily to be deferred until traffic had increased and ample funds were in hand to warrant such a heavy expenditure. The directors, however, trusted that the day was not far distant when their hope would be realized. The *Fei Hung* could steam at a speed of thirteen knots an hour. The building of the vessel had been superintended by Messrs. Parker & Robb.

The boat is lighted throughout by electricity, the necessary equipment having been provided by Messrs. Andersen, Meyer & Co.

PEKING-HANKOW RAILWAY EXPENDITURE.

The failure of the Ministry of Finance to include in the General Budget the special financial requirements of the Peking-Hankow railway for 1913 has caused the Ministry of Communications to address a despatch to the Cabinet and Finance Minister on the subject, in the following terms:—

"We note that you have not yet included our Special Accounting budget in the General Budget for the second fiscal year. We send herewith another copy. We hear that some people express their surprise at finding that such a huge sum as $9,000,000 will be expended on the Peking-Hankow Railway during the second fiscal year, and criticise the Ministry for making plans that are not in keeping with the financial situation. Such people evidently do not know the actual conditions of the Peking-Hankow Railway, and they are merely impressed by the magnitude of figures without inquiring into the reasons. For instance, the repayments for loans and outstanding accounts amount to three million dollars. The construction of the Chowkiakow-Yencheng branch line requires another two millions. In a word, the sum of nine million dollars as set forth in the budget for the second year is absolutely necessary. We attach hereto a list of the items in the budget for the Kin-Han Railway during the second fiscal year of the Republic."

A.—REPAYMENTS.	
Redemption Loan	$1,370,000
Repayments due Chuanhan Railway	1,500,000
Land purchase debt	122,017
B.—ROLLINGSTOCK.	
Locomotives	108,300
Passenger Cars	378,950
Goods Train	1,023,053
C.—MACHINERY.	
Traffic Dept.	46,725
Workshop	178,600
Maintenance Dept.	86 950
Outstandings	615.958
D.—CONSTRUCTION WORK.	
Head Office	17,500
Traffic Dept.	670,005
Workshop	97,544
Maintenance Dept.	129,650
Repairs Chienmen Wall, and filling moat	250,000
Fund for Huangho Bridge.	1,000,000
E.—BRANCH LINES.	
Chowkow-Yencheng	1,750,000
Changsintien-Tahuichang	350,000
Tax on materials	8,000
Grand Total	9,703,252

COMMISSION TO UNIFY RAILWAY ACCOUNTS

(*Continued on page 224.*)

anything with the operating accounts. Mr. Middleton of the Shanghai-Nanking Railway, who is familiar with the Indian system of Railway accounting, explained the uniformity and advantages of that system. Though differences of opinion naturally existed, as there were members representing different accounting systems, it was finally agreed to accept the Indian system of Railway Accounts as a basis of discussion, after Dr. Adams moved to that effect. Each heading and each item of construction account was thoroughly examined. In addition to comparing these with similar headings and items of the Belgian, French, German, Swiss and American systems, the Commission gave special attention to conditions and requirements in China, and after much hard work and careful deliberation major and minor headings of a Construction Account were drafted and provisionally accepted.

Before retiring, Mr. Henderson, on behalf of the members, proposed a vote of thanks to Dr. Wang for so ably conducting the conference. The meeting adjourned at 4 p.m., (Saturday, 22nd Nov.) until some future date which shall be fixed by the Chairman.

TRUSSED CONCRETE STEEL COMPANY

THE PLANT AT YOUNGSTOWN, OHIO

The extensive plant of the Trussed Concrete Steel Company at Youngstown, Ohio, is devoted exclusively to the manufacture of steel products, such as United Sash, Kahn Trussed Bars, Hy-Rib, Rib-Lath, Reinforcing Steel and other Building Specialities. The Waterproofing and Finishing Products of this Company are manufactured in a separate plant in Detroit, while Tile Plants and warehouses are located in various cities of the country. The main Executive and Sales-Offices are located in Detroit with representatives in all principal cities.

Six years ago only a few small buildings made up this entire plant. To-day the factory and yards cover the greater part of twenty-five acres of land. The plant consists of an administration building, power-plant shipping yard, and a large number of individual buildings, in which the various products are manufactured. In order to more clearly understand the development of the Plant and its manufacturing divisions it is well to review the products of the Trussed Concrete Steel Company and their development.

Originally the Kahn Trussed Bar was the principal product of the Company. The Kahn Trussed Bar is a patented reinforcement for use in concrete girders, beams, joists and floors, and consists of a main horizontal bar with rigidly connected diagonal shear members, formed from the same section of steel. Other reinforcing products were introduced shortly afterwards. These included the Rib Bar with a specially rolled section, so formed as to secure a positive grip in the concrete; Rib Metal, an improved type of Expanded Metal, formed from a special section of steel and consisting of a series of bars, rigidly connected by cross ties; Column Hooping, completely built up, and collapsible for convenience in shipping, etc.

The next important development of this Company was the invention of Hy-Rib, an entirely new type of reinforcement for concrete and plaster work. This material consists of a series of deep-ribs, connected by a specially expanded fabric, all formed from the same sheet of steel. The object of the ribs is to give stiffness to the reinforcement, so as to do away with forms when used in floors, roofs or walls, and to take the place of metal studs in partitions, sidings, ceilings, etc. Coincident with the invention of Hy-Rib, Rib-Lath, an improved expanded metal lath, which is on the same general principle of Hy-Rib, was introduced, as well as Rib-Studs for hollow walls and partitions.

The most recent development in the growth of the plant is the manufacture of United Sash for use in windows, monitors, partitions, etc. This steel sash is built on an improved principle of assembling which gives exceptional strength and efficiency to the construction of the sash. All types of sash are made, including standard pivoted side wall sash, vertical sliding sash, center pivoted and top hung continuous sash, steel and glass partitions, steel doors, etc.

Bearing in mind these facts and considering the necessary shipping yards, storage, stock rooms and receiving stations to handle this large and varied output, the reader will be able to understand the plan of the factory. At the extreme left of the bird's-eye view is shown a portion of the shipping yards for the Kahn Bars, Rib Bars and Reinforcing steel, containing large cranes, stock yards, cut-off presses, etc. The shearing of the Kahn Bars is done in an adjoining building. Here are found presses weighing twenty-five tons a piece, and with a capacity of two hundred and fifty tons for forming the rigidly connected shear members of the Kahn Bars. The dies for shearing these Kahn Bars weigh about five thousand pounds a piece.

The Rib Bar Department is in close conjunction with the Kahn Bars, and is completely equipped with shearing presses, bending machines, locomotive cranes, etc., to supply the Rib bars in any form desired. The Column Hooping is manufactured also at this part of the Plant. The Rib-Metal material reaches the shop in the form of a washboard shaped section, which is run through punches of three-hundred ton capacity, and is then expanded into the finished material.

The building for the Hy-Rib and Rib-Lath Manufacture are next adjoining and are provided with railroad siding, loading platforms, etc., for shipping purposes. In these buildings the flat sheets of steel are first especially prepared, beaded, trimmed and made ready for the punching press, which with special dies cuts the material as desired. The sheets next go to the heavy forming presses, which by a process of pressing and expanding develop the product into its finished form. The Hy-Rib material is also furnished by the shops in curved sheets; the curving being done with special bending machines.

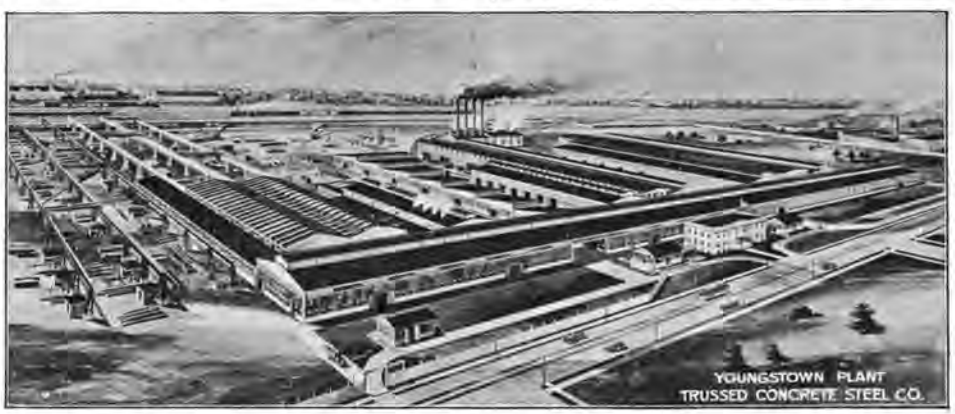
The United Sash Department includes a large number of buildings, owing to the great demand for this product, and the amount of space necessary for its manufacture. In this Department steel sash sections are combined under powerful presses into the finished sash. Practically the entire sash is machine-built, the joints, etc., being finished with pneumatic hammers. The presses used have a capacity of four hundred and fifty tons pressure, and weigh a hundred and twenty thousand pounds each. The processes of manufacturing requires an extensive series of presses for notching, shearing, and assembling besides many other finishing machines.

In the flore dome and floretyle division, which is one of the recent developments, are manufactured deeply corrugated steel domes and tyle for the use in floor construction in place of terra cotta tile. These are pressed out under special dies and powerful presses to the desired form.

The Machine Shop in conjunctiin with the plant is completely equipped to manufacture all various dies and tools necessary for the manufacture of the Kahn Building Products. Many of these are very complicated, consisting of as many as a hundred pieces with eight different cutting edges. To insure the accuracy of the finished product, these dies must be ground to a ten-thousandth of an inch fineness. The Power plant is located in the rear, and the Administration Building containing Order-Department, Drafting Rooms and Shop Offices is located in the front. Special Time Office Building and Garages are also indicated in the front. Complete switching and shipping facilities are provided and connected directly with the main line of the railroad, so as to handle the incoming and outgoing material in the shortest time possible.

The general construction of the buildings is along the most modern ideas of fireproof and daylighted factories. Practically the entire side-walls are made of United Sash with a small curtain wall underneath of Hy-Rib concrete construction. The buildings are constructed with long span trusses, so as to give the greatest convenience in handling material, while the roofs are built of Hy-Rib concrete. Many of the buildings are provided with monitors, which are equipped with continuous United Sash.

This plant of the Trussed Concrete Steel Company is an excellent example of modern efficiency, both in equipment and construction.



The General Executive and Sales Offices of this Company have their head-quarters in Detroit, Michigan, while the steel manufacturing plant is located at Youngstown, Ohio, for its convenience of the steel markets.

THE PROPOSED SINYANG-PUKOW RAILWAY

(*Continued from page 225*)

exist in the districts near the line, will be developed and afford considerable income to the railway.

The gentry of Anhui have been very anxious to see the railway constructed, primarily for the benefit of the country and secondly for the immediate benefit of the thousands of distressed people who could earn a livelihood on the construction work. The gentry, in fact, memorialised the Parliament to consent to the signing of the agreement as speedily as possible so that work might be commenced with the latter object in view.

Immediately financial arrangements can be made the concessionaires will commence active operations.

FAR EASTERN RAILWAYS

CHINA

Canton-Hankow Railway.—A landowner who is demanding an exorbitant price for a wedge of land outside Wuchang and on the route of the Hankow-Canton railway is proving the last obstacle to the commencing of construction in real earnest at the end, says the *Central China Post* of October 31. As to finances a full agreement was reached between the railway and the leading banks on September 12 and since the staff has been ready to begin construction on the Wuchang-Yochow section. The land near this centre has all been bought, with the exception of once piece outside Wuchang. Negotiations for the purchase of this are going on, and it was expected that an agreement would be reached by the next week. The definite date of commencing construction will have to be decided by Mr. Feng Yuen-ting, Inspector General of the railway, who was then in Peking.

Preparations have been also made to start work from Yochow at the same time as at Wuchang, Mr. Sinclair having gone up river to supervise the work. Parties to buy the necessary land between Wuchang and Yochow are at present out, but have met with a check in consequence of the theft of marking posts. In some parts the marks showing the surveyed route have disappeared, necessitating a further survey. However, it is stated that everything is being done to hurry on matters, and where possible telegraph lines are being put up; a telegraph expert from Peking accompanying the survey parties.

The route of the British section has been mapped out as far as Yichang hsien in Hunan, while the construction of the section in Canton province will have reached a point about seventy miles from the Hunan border by the end of the year. In consequence of the mountainous condition of the country on the border of the provinces work on the Kwangtung section will stop till the British section is completed, which, it is expected, will be in three or four years' time.

The main terminus station at Wuchang will be at the Wuchang Creek, below the city and opposite the Hankow Concessions. There will be another station at an important market village above the cotton mills. Work has already been started on the branch line, about two miles long, which runs to this station. When the line is completed there will be a connecting link between the main station at Wuchang and the Kin-han railway. Nothing has as yet been decided, but it is expected that the river will be crossed by a ferry service.

Canton-Macao Railway.—The Canton daily *Yun Kun Po* learns that the Government has arranged for a loan of $15,000,000 with a certain group of English capitalists for the construction of the Canton-Macao Railway. The agreement is on the lines of the Tientsin-Pukow Railway loan contract, with the exception that the rate of interest will be a little higher. The contract, it is said, will be shortly signed. The projected line will pass through the towns of Tong Chune, Chan Chune, Yung Tsai, Heung Shan and Tsin Shan, and will be about 149 miles in length. In the 28th year of Kwangsu, a convention was signed by Hsing Hsuen-huei and the Portuguese Ambassador, by which it was agreed that the line should be constructed jointly by China and Portugal with a capital of Tls. 2,000,000, but this was cancelled towards the end of the 31st year. Subsequently a number of Canton merchants obtained permission from the then Board of Communications to raise a capital of $6,000,000 to construct it as a "mercantile line," but, owning to the prolonged negotiations for the delimitation of the Macao boundary, the matter has been in abeyance ever since.—*H. K. Daily Press.*

The Kiangsi Railway.—The Shanghai correspondent of the *Tokyo Nichi-Nichi*, reports the *Japan Daily Mail*, calls attention to a movement just started among the Chinese for the nationalization of the Kiangsi railway, and says:—

The Kiangsi railway is to connect Kiukiang and Nanchang with Japanese capital, in accordance with the contract for a railway loan already concluded, and the work is to be carried out under the suppervision of Japanese engineers and experts. The work is not yet completed. It is the only line in the Yangtsze Valley in which Japan is directly interested. The Kiukiang-Tehan line, the part of the railway so far completed, was utilized by the Southern and the Northern troops during the Second Revolution for the transport, of provisions, and sustained no small damage to the rolling stock and railway buildings. In the course of the month of August this year, the Eastern Asiatic Industrial Company of Japan, which is in the position of creditor, approached the Railway Company with a request for an investigation of the losses sustained by the line and at the same time for an interview with the President of the Company, Mr. Wu Fang, in order to confer with him as to the future of the railway. This proposal for negotiations, of course, had in view the early completion of the whole line, as well as the maintenance of the rights of the creditors. The request was acceded to by the Railway Company, Mr. Chao, Director of the Company, going to Shanghai to conduct the negotiations on behalf of the President, who was prevented from attending on account of business. The result of the conference between the representative of the Eastern Asiatic Industrial Company and the Director of the Kiangsi Railway Company has not yet been made public, but according to information obtained from a reliable source, the Japanese Company appears to have proposed that the work of railway construction should be expedited under the superintedenoe of an increased staff of Japanese experts and engineers, and also that the loan required for the completion of the whole of the railway should be concluded with the Industrial Company, on condition that this Company's representative be appinted Financial Supervisor of the Railway Company. On account of the serious importance attaching to the latter proposal, the negotiations were not concluded at Shanghai and were transferred to Nanchang, where the head office of the Railway Company is situated. Here, however, the negotiations made no progress, on account of the opposition of the Railway Company, coupled with the distressed condition of the money market. The fact is that from the beginning some of the shareholders took exception to the conclusion of the railway loan with Japan, and upon the introduction of Japan's further proposal concerning the railway, they renewed their opposition, obtaining additional strength because of the change in the general circumstances which prevented the Railway Company accepting Japan's proposal for the early completion of the line by means of further loans. Thus the majority of the shareholders agreed in concluding that it would be advisable for the Railway Company to sever connection with Japan once and for all at this opportunity, or at least not to enter into any further connection. In the meantime Mr. Li Sheng-to in Peking was preaching the advisability of concluding Belgian loans if China felt the necessity of raising foreign loans, and influenced by him, as well as by the leading shareholders, the Railway Company at a general conference of shareholders, held in the latter part of September, passed the resolution proposing the nationalization of railway. According to the explanation offered by the President, Mr. Wu Fang, at that conference, the Kiangsi railway is divided into five sections, of which only the first section leading from Kiukiang to Tehan is completed. Once the line is extended as far as Hsuchapu from Tehan, the completion of the further sections will be attended with little difficulty, waterways facilitating the transport of construction materials. To connct Tehan with Hsuchapu, however, as many as three railway bridges must be constructed which means a large expenditure. In these circumstances the completion of the whole line requires an additional capital of three million dollars, or means a deficit to the amount of well nigh 1,800,000 dollars, the funds now at the disposal of the Company exceeding scarcely 1,200,000 dollars. Mr. Chao Wei-hsi, Vice-Civil Goveonor of Kiangsi, who was also in attendance at the general meeting, in the course of a speech stated that the Peking Government would certainly take upon itself the completion of the Kiangsi railway in order to ensure the maintenance of China's rights of exploiting her natural resources. If the Railway Company considered it necessary to extend the line from Tehan to Hsuchapu and Pinghsiang, it would be highly advisable that the Company should prefer a Belgian loan to other foreign loans, because Belgium had no dangerous ambitions, her sole aim being the acquirement of a sound investment.

These circumstances now unmistakably indicate that the relations between Japan and the Kiangsi railway are gradually growing slacker, and in view of the fact that all restrictions hitherto placed on economic loans in China have been removed, the situation in regard to the Kiangsi railway deserves careful consideration by those Japanese who aspire to play any active part in the international economic arena of the Chinese Republic.

The Honan Railway.—Actual work has begun on the railway which is to link Kaifeng to the Tientsin-Pukow railway at Hsuchowfu and will bring Kaifeng within about two days of Shanghai, writes the Kaifeng correspondent of the *C. C. Post* on the 11th instant. The work is being pushed from both ends, and it is estimated that trains will be running from Kaifeng to Hsuchow in a year and a half. The section from Hsuchowfu to the sea will be completed later.

It would be difficult to conceive of a line anywhere on earth that will be cheaper or easier to build than this. The land is level and there are no large rivers to cross; the work for the embankments is contracted for by small contractors, and there would seem to be no difficulty as far as labour is concerned. The latter is cheap and reliable—or as reliable as any of that class to be found. One can but wonder where American and British railwaymen were when they permitted the Belgians and French to obtain such an easy contract. Still there are large sections of the great central plain that need railways and where railways will be built. Certainly British and American engineers should be on the lookout for such golden opportunities as these, comments the correspondent.

On the western end, however, the country is more rugged and mountainous. A native company has been building a line from Honanfu to Tungkuan. In three years they have built about a hundred li of road, but their line has been acquired by the Belgians and French, who will extend it on to Sian and eventually to Lanchow, thus completing the grand trunk line across China from Kansu to the sea.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended October 18 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	55,891	13,225	69,116

1912....	42,271	9,611	51,882
Increase.	13,620	3,614	17,234
Decrease	—	—	—

For forty-one weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,907,174	407,434	2,314,608
1912....	1,816,635	321,040	2,137,675
Increase.	90,539	86,394	176,933
Decrease	—	—	—

Week ended October 25.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	56,494	12,455	68,940
1912....	40,263	9,026	50,189
Increase.	19,231	2,529	18,760
Decrease	—	—	—

For forty-two weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	1,963,668	419,889	2,383,557
1912....	1,856,898	330,966	2,187,864
Increase	106,770	88,923	195,693
Decrease	—	—	—

Week ended November 1.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	52,824	12,081	64,905
1912....	40,531	9,747	50,278
Increase.	12,293	2,334	14,627
Decrease	—	—	—

For forty-three weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	2,016,492	431,970	2,448,462
1912....	1,897,420	340,713	2,238,142
Increase.	119,063	91,257	210,320
Decrease	—	—	—

Week ended November 8.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	52,208	10,155	62,363
1912....	35,232	7,638	42,870
Increase.	16,976	2,517	19,493
Decrease	—	—	—

For forty-four weeks.

Year.	Passengers.	Goods and Sundries.	Total
	$	$	$
1913....	2,068,700	442,125	2,510,825
1912....	1,932,661	348,351	2,281,012
Increase.	136,039	93,774	229,813
Decrease	—	—	—

JAPAN

Foreign Loans Required.—The cost of the railway scheme which it is proposed to commence next year and to be completed in eleven years, is estimated at Y162,870,000, consisting of Y95,460,000 for construction of new lines and Y67,410,000 for improvement of existing lines So much of this sum as is not realisable from profits of working, must be raised by means of bonds in accordance with the Imperial Railway Special Accounts. In accordance with the Government's financial policy and the condition of the money market, the amount by which the railway revenue fell short of the demand has been drawn from the Deposits Bureau during the past few years; but the increase shown in the deposits in the Post Office Savings Bank, which form the most important part of the Deposits Bureau funds, has not been so satisfactory as was expected by the Government last year.

In March last the Government raised a foreign loan of Y100,000,000, and redeemed the short term Railway Notes issued in Japan, besides settling a part of the indebtedness of the Railway accounts to the Deposits Bureau. The loan, in fact, was only sufficient to settle debts, and the question how to raise the funds required for the forthcoming railway programme still remains unsettled.

In the opinion of an official responsible for the solution of the problems, quoted in the *Asahi*, the only course available for the Government to tide over the difficulty is to amend its unsettled policy in railway finance, establish a fixed and definite policy which will not be subject to modification for at least six or seven years, and raise a foreign loan to make good the deficit left after the profits have been set off against the requirements of the programme. From this the *Asahi* infers that the Government has decided to modify existing railway schemes and to raise a foreign loan for carrying out the new scheme. The annual expenditure for the improvement of the existing railway lines, it states, will be about Y40,000,000, which is the maximum limit of the work the railway authorities are capable of carrying out.

The *Osaka Mainichi* quotes Baron Takahashi, Minister for Finance, as follows on this question: "The management of the railway accounts has aroused a great deal of public attention, and different questions have been raised in connection with the general financial scheme. Railway profits being insufficient to meet the requirements for improvement and new construction, Y21,500,000 was drawn for this purpose for the present year from the Deposits Bureau. At the present rate of increase in Post Office savings, it is doubtful whether the money can be borrowed from the Deposits Bureau next year as it has been this year. The improvement and construction of railways is indispensable for developing industry, so the work cannot be delayed even temporarily. Viewed in the light of the principle on which the railway accounts have been kept separate from the general accounts, it is only proper to have recourse to a loan for raising money for railway works, and there is no reason why bonds should not be issued at an opportune time. I am not in a position as yet to make any statement regarding the business of Mr. Mori, financial agent of the Government in Europe, who is leaving Tokyo for London by the end of the month."

Nankai Railway Co.—The profit and loss accounts of the Nankai Railway Company for the half-year just closed put the gross revenue at Y810,085 and expenditure at Y420,473, leaving a net profit of Y387,612, which comes up to Y555,665 with the surplus brought over. This sum it is proposed to dispose of as follows:—

Legal reserve	Y19,400
Bonuses to the officials	9,500
Dividend, 8½ per cent. per annum	311,732
Carried forward	215,033

Narita Railway Co—This Company at its semi-annual general meeting adopted the statement of accounts together with the following proposal for the disposal of the profits:—

	Yen.
Net profits	115,299.53
Brought over from last account	6,155.75
Total	121,455.29
Legal reserve	6,500.00
Secondary reserve	11,500.00
Bonuses for directors and auditors	11,000.00
Dividend at 7 per cent.	84,875.00
Carried forward to next account	7,580.29

Japanese Railway Returns.—According to official investigations satisfactory results attended the business of the Japanese Government Railway Board during September last. The receipts from passenger traffic for the month amounted to 4,903,753 *yen* and those from freight to 4,578,539 *yen*, thus bringing the gross income up to 9,482,292 *yen*. As compared with the same period of last year this is an improvement by 846,033 *yen*.

New Light Railways.—The Government has granted charters to the Ishikari Colliery Company and the Okayama Light Railway Company for laying railways 5.64 miles and 4.40 miles in length. The capital of the former Company is 394,000 *yen* and of the latter 182,000 *yen*.

The Railway Board has granted a charter to the Iwamatsu Light Railway Company, promoted by Mr. Den Honda, for laying a light railway between Iwamatsu village and Takachika, in Kita Uwa district, Ehime prefecture. The length of the railway will be 1 mile 60 chains with a gauge of 2 feet 6 inches. The capital of the company will be 69,500 *yen*.

The Railway Board has granted a charter to the Nakazeki Light Railway Company for the construction of a line between Bofu and Nakazeki, in Sawa district, Yamaguchi prefecture. The length of the railway will be four miles eight chains with a gauge of 2 feet 6 inches. The Nakazeki Light Railway Company is promoted by Mr. Benji Kato and 24 others with a capital of 150,000 *yen*.

The Railway Board has also given a charter to the Takata Railway Company for laying a light railway connecting Chosu, Usa district, with Takata, Nishi Kokuto district, in Oita prefecture. The length of the railway will be 3 miles 40 chains with a gauge of 2 feet 6 inches. The Takata Railway Company is promoted by Mr. Chuzo Eto and 21 others with a capital of 110,000 *yen*.

The Bisai Railway Company has obtained a charter for laying railways between Nanatori and Tado in Kuwana district, Mie prefecture and between Tsushima and Tatsuda in Umibe district, Aichi prefecture. The length of both railways will be 4 miles and 73 chains with a gauge of 3 feet 6 inches. The cost of construction of the two lines is estimated at 220,000 *yen*.

MANCHURIA

Kirin-Changchun Railway.—The repairs on the Kirin-Changchun Railway having been quite finished, the train service, which has been operated only once daily from each terminus since last summer's inundation was to be restored to twice daily from November 15, by running a mixed passenger and goods train.

South Manchuria Railway.—During the month of October the S. M. Railway earned Y1,990,616, being an increase by Y639,822 over the corresponding month of last year. This gives a daily average of Y64,213. The aggregate receipts since last April reach Y11,132,006, which is an increase by Y2,736,568 over the corresponding period of last year.

The South Manchuria Railway Co.'s estimates of capital expenditure for investment in the next fiscal year, as roughly outlined by the Company's Directorate, are said to reach Y13,400,000, as against Y14,200,000 for the present fiscal year.

Kirin-Hoiryong Railway.—The Department of Foreign Affairs of the Chinese Republic, recognizing the necessity of a speedy completion of the Kirin-Hoiryong Railway, to connect Kirin, Hoiryong and Northern Chosen, has decided to despatch a number of surveyors to the territory, says a Tokyo paper.

The railway is to be built from Kirin, *via* Omoso, entering Chientao and passing through Chutszchieh, the principal town of Chientao, to Hoiryong, a distance of about 200 miles. The estimated cost of the railway is 40,000,000 yen. When the line is completed, connections will be made with the Seoul-Wonsan line, now under construction, and the Eastern Chosen coast line and Kyongsong line, to be laid in the near future. This will not only contribute to the development of commerce between China, Manchuria and Japan, but will promote a better feeling between Japanese and Chinese. The conditions under which the line are to be built are similar to those in regard to the Kirin-Changchun line.

TIENTSIN-PUKOW RAILWAY.

(Southern Section)

Owing to the fact that the southern section of the Tientsin-Pukow line has been treated as a line under construction up to June 30th last open line accounts were not maintained, and it is impossible therefore to give a full report of operations. However, by the courtesy of the authorities we are enabled to reproduce interesting extracts of the coaching and traffic receipts for 1912.

Goods Traffic for 1912

Previous Year Weight Pcls.	Previous Year Amount $	Previous Year Amount c.		Current Year Weight Pcls.	Current Year Amount $	Current Year Amount c.
—	—	—	I.—General Merchandise	3,996,398	856,730	09
—	—	—	II.—Government Stores	131,327	10.833	78
			III.—Railway material for construction	—	—	—
—	—	—		4,127,725	867,563	87
			IV.—Coal			
—	—	—	(a) For the puhlic	6,298	433	35
—	—	—	(b) For Loco. Dept. (Revenue only)	—	—	—
—	—	—	(c) For other Railway Services	—	—	—
—	—	—	Total Coal	6,298	433	35
—	—	—	V.—Revenue Stores for all Depts., excepting coal	—	—	—
—	—	—	Total Goods	4,134,023	867,997	22
No.				No.		
			VI.—Livestock (Ordinary)			
—	—	—	(a) Horses, cattle, etc.	182	312	81
—	—	—	(b) Sheep, goats, pigs, etc.	65	13	10
—	—	—	Total	247	325	91
			VII.—Livestock (Government)			
—	—	—	(a) Horses, cattle, etc.	282	889	90
—	—	—	(b) Sheep, goats, pigs, etc.	—	—	—
—	—	—	Total	282	989	90
—	—	—	VIII.—Rents, demurrage, wharfage, storage, etc.	—	500	00
—	—	—	IX.—Miscellaneous	—	10,921	53
—	—	—	Total	—	11,421	53

N.B.—16-80 piculs are taken as the equivalent of a ton.

Coaching Traffic for 1912

Previous Year Total No	Previous Year Total Amount $	Previous Year Total Amount c.	Single fare per mile ...	First Class about 6 1/10 cents No.	First Class Amount $	First Class Amount c.	Second Class about 3 1/10 cents No.	Second Class Amount $	Second Class Amount c.	Third Class about 2 1/10 cents No.	Third Class Amount $	Third Class Amount c.	Current Year Total No.	Current Year Total Amount $	Current Year Total Amount c.
			I.—Passengers:—												
—Nil—			(a) Ordinary...	833½	13,631	320	1,691	11,173	315	502,592	449,414	220	505,116½	474,218	855
			(b) Government	240	1,436	840	839	2,853	420	98,588	30,973	570	99,667	35,263	830
			(c) Season	—	—	—	—	—	—	—	—	—	—	—	—
			(d) Privilege...	—	—	—	8	13	130	20,628	9,557	697	20,636	9,570	827
			(e) Excursion	6	100	240	9	131	120	130	67	883	145	299	243
			Total	1,079½	15,168	400	2,547	14,170	985	621,938	490,013	370	625,564½	519,352	755
—Nil—			Excess Fares	—	437	053	—	358	155	—	14,406	667	—	15,201	875
			Sleeping Berths	160	800	000	—	—	—	—	—	—	160	800	000
			Total	1,239½	16,405	453	2,547	14,529	140	621,938	504,420	037	625,724½	535,354	630
			Previous Year...												
			II.—Passengers' Luggage									Piculs	108,939.89	12,248	510
—Nil—			III.—Government Baggage									„	205.74	522	500
			IV.—Parcels:—												
			(a) For the Public									„	35,500.84	10,612	560
			(b) For Revenue									„	—	—	—
			V.—Horses, Carriages, Dogs, etc. (Ordinary)									No.	1,306	2,764	010
			VI.—Horses, Carriages, Dogs, etc. (Government)									„	480	719	110
			VII.—Special Trains									Train Miles	295	979	000
			VIII.—Trollies									Trolly Miles	—	—	—
			IX.—Miscellaneous											352	561
			X.—Post Office											—	—
—Nil—			Total									Total		563,552	881

N.B.—1.—The Excess fares have been divided up between I, II and III class in the same proportion as the actual "ordinary" traffic for these classes.

2.—Total amount for Telegraph Earnings for the year is $10,795.67 (Chinese Telegraph Administration Charges $2,937.91 and Northern Section Shares $239.45 are included).

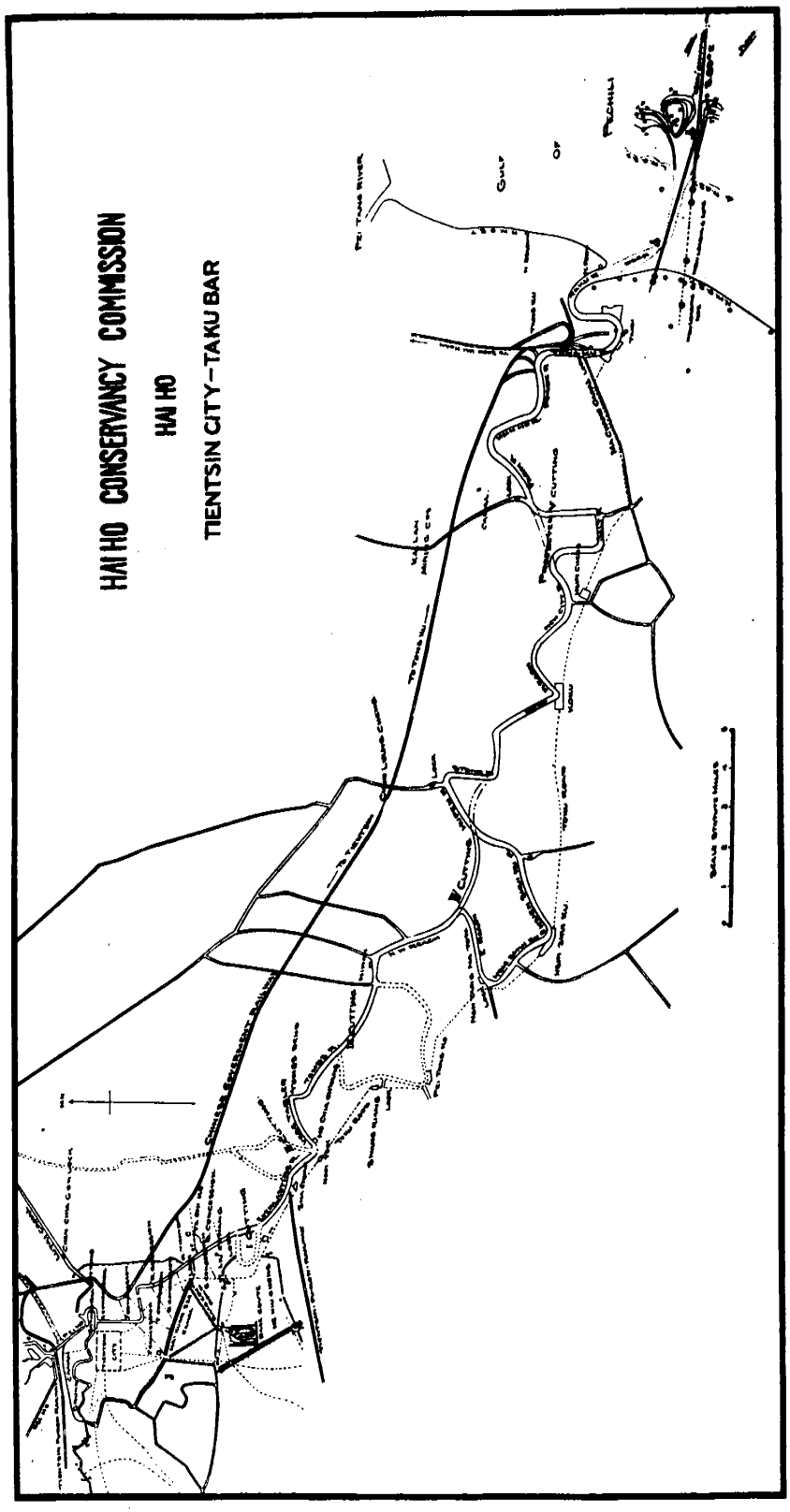
3.—Total amount for Sundries (Rents of Refreshment rooms and cars and Miscellaneous only, for the year is $1,139.01.

record was established by the S.S. "Varg" on the 17th July, her draught being 13'.10" aft and 14 feet forward. The minimum depth available in the river at ordinary High Water was from inside the Bar to Tongku 20 feet and this depth gradually decreased to 13 feet 6 inches at Tientsin.

The record for 1912 is not so satisfactory and there was a marked decrease in the draught of vessels coming to the bund. This was not due to any deterioration in the river but to the shoal state of the Taku Bar consequent on the heavy deposit of silt brought down by the exceptional rainfall.

In 1913, up to November 30th, of 949 vessels entered at the port 672 came to the bund. On 3rd October the S.S. "Vestfold" came up on a draught of 13'.11". Several vessels have made the trip to and Tongku in 3 hours and 20 minutes and one ship accomplished the voyage from Chefoo to the Tientsin Bund in 20 hours, which, as far as is known, is the shortest time on record.

It should be noted that increased draught of vessels navigating the river to Tientsin in 1907 and subsequent years does not indicate that the river had improved in proportion over the years immediately previous. Prior to 1907 the river could carry a deeper draught than the Bar and it was the improved depth of the latter, brought about by raking and scour that enabled vessels to come up river on a deeper draught.



The first instalment of Fcs. 1,000,000 of the loan of francs 8,000,000 to be made to the Government of China by the Banque Industrielle is reported to have been paid over on December 29.

It is stated that Messrs. Lever Bros., the Brunner Mond, Crossfield, Gossage and Erasmic companies have combined for the purpose of manufacturing soap and allied products in China. The capital of the companies concerned is £30,000,000. A factory is to be erected shortly at Shanghai.

THE JAPAN STEEL WORKS

Admiral Yamanouchi, President of the Japan Steel Works, at the last general meeting of the Company expressed his intention of resigning his post at the earliest opportunity that offered. Representatives of Messrs. Armstrong and Vickers have been for some time in Japan inspecting the conditions, and conferences have been held.

As the reason for his resignation the Admiral stated at the last meeting that though the business for the preceding term had again resulted in a loss, the business was now nearing the corner, and already surpassed the Naval Steel Works at Kure. Therefore there was no necessity for him to remain in office. It is understood in business circles, however, that the Admiral is dissatisfied with the policy followed by the Company, which, in the Admiral's opinion, is quite at variance with the original objects for which the works were established.

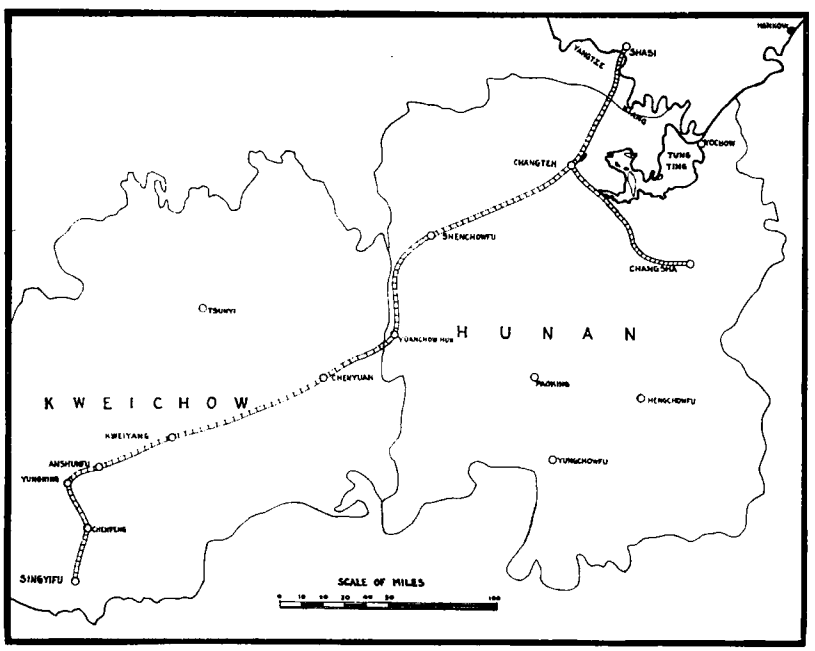
It is believed that the Admiral's resignation will lead to a change in the Board of Directors. —*Japan Daily Mail.*

NEW RAILWAY THROUGH HUNAN AND KWEICHOW PROVINCES

INTRODUCTION OF THE PERCENTAGE CONTRACT CONSTRUCTION SYSTEM IN CHINA

On December 18th, the Minister of Communications, H.E. Chow Tsz-chi, on behalf of the Chinese Government, entered into an agreement with Lord ffrench, representing Pauling and Company, Limited, of London, for the financing and construction of a railway from Shasi on the Yangtze to Shingyi in South Eastern Kweichow.

This contract is a modification of the one signed by Dr. Sun Yat-sen and Lord ffrench on July 4th ulto. providing for a railway between Canton and Chungking. The Canton-Chungking line had been designed as the shortest route from the rich and populous province of Szechuan to deep water at Canton. With the great development of trade and commerce incidental to the opening of Szechuan to rail transportation, the shortest route to the sea was imperative to the future prosperity of the province, and as Canton was 250 miles nearer than Shanghai, this route was naturally selected. The only difficult section of the proposed line was the 160 miles between Fuchow on the Yangtze up the Wukiang valley to Szenanfu. This section also passed through a sparsely settled country, but once the through line was completed, and the trade of Szechuan could find its outlet to Canton, it was hoped that the line would become one of the most profitable in China. The crowded population of Szechuan would have found opportunities for colonizing the valleys of Kweichow and thus aided in building up the prosperity of the proposed line.



Rough Sketch of the Shasi-Shingyi Railway

The railway as projected followed the existing route of the Yueh Han Railway to Samshui, and from that point would have passed through Shiuhing and Takhing to Wuchow, thence up the Kwei River Valley through Pinglo to Kweilin, and from there over the Nanling mountains to Yuanchow. From Yuanchow the route was through Tungyenfu to Szenanfu, and thence down the valley or gorge of the Wuking to Fuchow on the Yangtsze, where it would connect with the rails of the Szechuan Railway to Chungking and Chengtu.

The contract with Messrs. Pauling and Company had been initiated in London in April last by Dr. Sun Yat-sen's representative and provided for the construction of the line under contract in which the contractor's profit was a fixed percentage over and above the actual cost of construction and equipment.

The usual recognized and legitimate basis of profit on large construction contracts of this nature is fixed at ten per cent. The American Government allowed fifteen and a half per cent. over the actual cost of the Philippine Railways as the contractor's and financier's profits. The British Government is paying ten per cent. profit to the contractors on the largest harbour works construction in Great Britain, and the Indian Government is also allowing ten per cent. profit on engineering and construction work. Messrs. Pauling and Company, for reasons purely applicable to China, were prepared to undertake the contract at a lower percentage than the usual practice and custom, largely to convince the Chinese of the advisability of having their railways constructed under a different system than the depart mental one. Owing to the fact that all foreign financed railways in China have hitherto been constructed under loan agreements providing for engineers nominated by the Banks, the experienced contractors who have constructed thousands of miles of lines in other countries, were debarred from participating in the development of Chinese railways. These reputable contracting firms with years of experience behind them and an effective organization to operate with, could naturally construct railways more economically, efficiently and expeditiously than any one engineer nominated by the Banks, who had to create an organization before he could proceed with the work. The railways constructed under the departmental system, have in some instances been subjected to much criticism as to the costs of construction, but owing to the peculiar political situation surrounding the financing of Chinese railways, the Chinese Government has not been at liberty to modify the usual departmental loan terms.

In the past various contracting firms have offered to construct and equip railways in China on the same specifications of the best built and equipped loan built line at a price which on analysis proved that the actual cost would be from one-third to one-half the cost of those built under loan agreement terms. But as the European governments steadily preserved the monopoly in favor of the more expensive commercial methods, the experienced contractors were never permitted to enter the field.

The firm of Pauling & Company, Limited of London, enjoy the peculiar distinction of being the most experienced and capable railway builders in the world. They specialize in railway work alone, and maintain a splendid organization for the prosecution of their contracts. This firm has constructed over 2,500 miles of lines for the Rhodesian Government alone, and are permitted carte blanche in the carrying out of construction operations.

Messrs. Pauling & Company had endeavored for several years to gain a foothold in China, but the peculiar influences binding the British Government and the British Official Group, effectively closed the door to their entrance in the field as contractors.

It was because China's interests demanded some modification of the departmental and commercial system of constructing her

future railways, and because the period of concessions had come to an end that the negotiations were opened by Dr. Sun Yat-sen's representative with Messrs. Pauling & Co., which led to the Canton-Chungking railway agreement. That agreement was, however, nullified by the cancellation of Dr. Sun's powers as head of the Chinese National Railway Corporation by the President on July 18th, and the Government refused to recognize the validity of any agreement entered into by Dr. Sun. Becoming convinced, however, of the soundness of the principle of railway construction on a percentage basis underlying the Canton-Chungking Railway contract, President Yuan decided to have it initiated in China, and the Minister of Communications negotiated another agreement for the above-mentioned route from Shasi to Shingyi.

Although the Canton-Chungking line was recognized as an essential trunk railway for the future development of the Republic, it was considered that it was not immediately necessary, and that the country's political needs demanded that the distant provinces should be linked with Hankow as soon as possible.

It was therefore decided to leave the Canton-Chungking proposal out of consideration and to adopt a line linking Hankow with the province of Kweichow and Yunnan. The terminus of the line was located at a point opposite Shasi on the Yangtzse, to be connected direct with Hankow by the German section of the Hukuang Railway, or by a separate line. From Shasi the new railway will strike southwards through Lichow to the treaty port of Changtehfu. From there a branch line will communicate with the Provincial capital and treaty port of Changsha and connect with the Canton-Hankow Railway.

From Chengtehfu the main line will proceed along the fertile and rich valley of the Yuan River, through Shenchowfu to Yuanchowfu, thence through Szechow, Chenyuan and Pingyueh to Kweiyangfu, the Provincial capital of Kweichow Province. From there it will proceed to Anshunfu and Yungning and thence south to Shingyi, the terminus. At this point it will connect with a railway to be constructed from Yunnanfu through Shingyi and thence south to Peseting, on the West River, and to Nanning.

The approximate mileage of the new line is as follows:—

Shasi To Lichow	50	miles
Lichow to Changtehfu	40	,,
Changtehfu to Shenchowfu	110	,,
Shenchowfu to Kienchowting	25	,,
Kienchowting to Fenghwangting	20	,,
Fenghwangting to Yuanchow	35	,,
Yuanchow to Hwangchow	30	,,
Hwangchow to Szechow	30	,,
Szechow to Chenyuan	30	,,
Chenyuan to Hwangping	30	,,
Hwangping to Pingyueh	30	,,
Pingyueh to Kweiyang	60	,,
Kweiyang to Anshunfu	60	,,
Anshunfu to Chenning	10	,,
Chenning to Yungning	20	,,
Yungning to Chengfeng	35	,,
Chenfeng to Shingyi	40	,,
Branch	655	Miles
Chantehfu to Yiyang	55	,,
Yiyang to Changsha	50	,,
Total	760	miles

The railway is most important for the political control of the country as well as for the opening of an exceptionally rich and productive region. It follows the old established trade route up the Yuan River valley, which from time immemorial the Chinese have employed to reach Kweichow and Yunnan. The Yuan River is navigable for small boats as far as Chengyuan in Kweichow, and from this point carriers are used exclusively until the Yuannan border is reached, where ox carts take their place With the completion of the proposed line westwards from Singyifu to Yunnan, the southwest will be brought into direct touch with the rest of the country.

SOUTH MANCHURIA RAILWAY.

ESTIMATES FOR NEXT YEAR.

According to the *Manchuria Daily News* the South Manchuria Railway stimates for the coming year amount to Y.11,176,000. The items are said tobe as follows:—

		Yen.
Railway	Main and Branch Lines.	2,620,000
	Mukden-Antung Line	600,000
Shipping		25,000
Electricity		167,000
Gas		156,000
Harbour		2,160,000
Mining		3,320,000
Hotels		160,000
Land		1,743,000
Sundries		225,000
		11,176,000

(1) RAILWAY.

Main Line.—Earthwork Cutting for the site of the new railway station, Dairen, cutting, grading, construction of culverts, retaining walls and drains at places between Dairen and Changchun.

Bridging: Construction flood-opening on the Hun; the extension and reconstruction of other bridges.

Rail-laying: Relaying of rails in the compounds of the station at Dairen, Tashihchiao, Changchun, etc.; improvement of the sub-grade installing of tie-plates.

Stations: Construction of engine sheds, Dairen, and the auxiliary buildings; construction of warehouses at Mukden; installation of turntables at Dairen, Tashihchiao, and Changchun; construction of subterranean passageway in the railway station compound at Changchun; coaling equipments at Dairen and Tashihchiao; water-feeding arrangements at several places, etc.

Signalling: Installation of an interlocking of signals and switches; replacing of the telephone system with a more up-to-date installation.

Mukden-Antung Line.

Levelling and alterations in railway station compound at Penchihu; filling work at various places; constructions of sidings at Antung Station; replacing of the telephone service as on the Main Line.

Rolling Stock.

Construction of five locomotives, fifteen passenger cars, and 170 goods cars for the Main Line and the conversion and alterations of both passenger and goods cars; construction of a locomotive, four passenger cars, and 38 goods cars for the Mukden-Antung Line.

(2) SHIPPING.

Construction of a dredger and two hopper barges for use in connection with the Dairen Harbour Works: a coaling boat for Dairen Wharf and a steam launch for Yingkou Branch of the railway Wharf Office.

(3) ELECTRICITY.

As the demands for lighting service and motor power at Dairen, Mukden, Changchun, and Antung have risen, the extension of wires, the installation of additional switch-boards and the other accessory equipments are to be undertaken.

(4) GAS.

The existing service at Dairen is to be extended to Shahokou. Provision is to be made to meet the steadily increasing demands in the city of Dairen.

(5) HARBOUR WORKS.

Reclamation of the shorefront of Jijiko (East End); construction of Northwest Breakwater; reconstruction of quay wall; construction of the new third pier; continuation of reclamation work of 25,000 *tsubo* along the shore line of Hama-cho; Dredging work at Antung; bunding work at Yingkou.

(6) WHARVES.

Construction of permanent warehouses on East Quay; grading work in the compounds of the branch offices at Yingkou, Antung, and Shanghai, and reconstruction of roads.

(7) MINING.

In order to make up the shortage of output of coal at Fushun Collieries through the installation of the sand-flushing method at Oyama and Togo Shafts, two new inclines are to be excavated near Oyama Shaft and at Wantawu; Laohutai Pit is to be the next to have a similar installation; installations for the producer-gas plant and the turbo-generator plant installation of mechanical appliances for transportation of coal at the Collieries; completion of the equipments for transportation by electricity.

(8) HOTELS.

Extension of the Yamato Hotel at the railway station at Mukden and the furnishing of the new Yamato Hotel, Dairen.

(9) LAND.

Construction of roads and bridges, waterworks, parks, cemeteries, and crematoriums in the railway Area; levelling work for building lots; construction of new buildings for Central Hospital, Dairen, and extensions of branch hospitals at Yingkou and Antung; construction of the new buildings for the branch hospital at Mukden; additional equipments of branch hospitals at Liaoyang and Kungchuling.

Construction or extension of primary school houses at Haicheng, Mukden, and Lienshankuan, and the Chinese Primary School at Liaoyang.

Continuation of construction of the new premises for the Central Laboratory with its various divisions, and the installation of the machinery, etc.

Installing sundry arrangements at the Industrial Experimental Station at Kungchuling and its branch station at Hsiungyocheng.

Constructions, alteration, and repairs of the Company's Offices and the officials' residences.

kept in check deliberately despite the fact that through its means the wealth of the nation could easily be multiplied a thousandfold, but since Mr. Chang Chien has demonstrated in his own home districts that he is far-seeing enough to realise the great advantages of modern machinery—for he has established many industries equipped with foreign manufacturing plants—there are grounds for believing that he will use every endeavor to bring to China the best that is available both in the matter of men, money and machinery for the establishment of her most important and most shamefully neglected industry upon a basis commensurate with her financial needs and vastness. It will be deplorable if at this stage of China's history the Cabinet does not see eye to eye with Mr. Chang Chien. They are the officials who are responsible for a final decision making for the adequate opening of industrial avenues to foreign capital, and without foreign capital and brains no proper industrial development can take place. So much depends upon the results of mining that it is impossible for foreigners, who have long learned what the chief source of wealth is, to understand the process of thought of the Chinese when they bar the way to the employment of the capital and energies of men who have the knowledge and experience which will best serve her at this important period of her existence.

CONSERVATION AND IRRIGATION

One of the most hopeful of recent signs was the mandate appointing Mr. Chang Chien head of a National Conservancy Bureau. This body is to control the Hwai River and all conservation and irrigation schemes, except those already provided for by the Whangpoo and Haiho Conservancy Boards. It is understood that Mr. Chang Chien has in view a most comprehensive scheme for the betterment of the condition of the waterways of China, and that work on an extensive scale will be begun directly money becomes available.

While progress in railway construction is of the very first importance to the well being of China, the means of communication provided by her innumerable waterways should be recognised as of great value. For centuries the bulk of the internal trade was floated on the bosom of the waters, natural or designed, and the canal system of China has evoked wonder and praise from the Westerner. But neglect and corruption have largely impaired the value of the waterways. What used to be the besetting sin of China, the diversion of money intended for public purpose to private pockets, has led to the impairment of such magnificent and useful works as the Grand Canal.

The expenditure of great sums on the dredging and other material required and in labour, will be one of the most lucrative investments China will ever have made. In fact the provision of labour in the districts which suffer so regularly from floods and famines should properly be regarded as one of the most insistent duties of the Government. In all the circumstances, the Government is to be congratulated upon the establishment of the Bureau, and we have no doubt that under the able direction of Mr. Chang Chien, with expert foreign assistance, the waterways of China will become a gigantic factor in advancing the prosperity of the country.

CHINA'S RAILWAYS IN 1913.

The year 1913 will stand in China's railway history as the one of greatest advancement in the allotment of mileage and the extent of lines under construction since the first locomotive ran thirty-seven years ago with business intent on the Shanghai-Woosung railway,—a ten mile stretch, which was subsequently torn up and sent to Formosa by officials whose prejudice against steam traction was greater than their wisdom. The year that has just expired has seen approvals granted by the Government of the Republic for approximately 3,800 miles, a distance almost two-thirds as great as that of the railways that have been constructed and placed in operation since 1876, and work under construction to the extent of 2,600 miles. At the end of 1912 China had no more than 6,000 miles in operation with some 2,000 odd miles under construction. For a country with an area of 4,278,352 square miles (or, leaving out the dependencies, an area of 1,896,500 square miles for China Proper) and a population that is placed in round figures at 400,000,000, this is amazingly small and virtually insignificant when the vast areas under cultivation and the immense deposits of mineral wealth that await development are taken into consideration. But it looks as if the old days of violent opposition or passive resistance to modern progress have been left behind, and that men have come into power who realise the great and lasting value of rapid means of communication and mean to see their country profit by them. The activities in 1913 mark the turning point in Chinese opinion on the railway question, and 1914 can be looked to for startling advances along the line of providing for China a system which will permanently settle the burning question of the folly of haphazard construction, a question which has been thrashed threadbare by the ardent and active friends of the country. The Government lines in course of construction during the year were:

The Hukuang system	1,200 miles,	commenced.
Kalgan-Tatung railway	100 ,,	practically completed.
Lung-Tsing-U-Hai railway	1,500 ,,	commenced.
Total under construction,	2,800 miles.	

In addition to these railways, desultory work has been carried on by the Company having the right of construction of the southern section of the Canton-Hankow line.

The new lines arranged for during the year are as follow:—

Tatung to Chengtu	1,200 miles.
Pukow to Sinyang	300 ,,
Shasi to Singyi	800 ,,
Taonanfu to Jehol and South Manchurian Railway feeders	1,200 ,,
Tsinanfu to Shunteh and Kaumi to Hanchwang	300 ,,
Total	3,800 miles.

NEW GERMAN RAILWAYS IN CHINA

On December 30 an agreement was signed at Peking by the representatives of the Republic of China and the German Minister in regard to important lines connecting with the Tsingtao-Tsinanfu Railway. One of these will run from Kaumi or Kaomi on the Tsingtao-Tsinanfu line to Ichowfu and thence on to Hanchuang, a station on the Tientsin-Pukow Railway on the Shantung border. The second line is an extension from Tsinanfu to some point on the Peking-Hankow line, to be decided upon after survey and investigation of the points most advantageous to railway building.

In an article on "Germany's Rights in Shantung," which appeared in the FAR EASTERN REVIEW in October last we foreshadowed the conclusion of this agreement. It was poined out in that article that a considerable amount of traffic would be diverted to Tsingtao. The line linking up a point near Shuntefu to Tsinanfu will also obviously be of great assistance in building up the trade of Tsingtao. The *Frankfurter Zeitung* on December 24 confirmed the forecast made in this paper that these lines are to be State-owned, but German capital and materials have to be employed in their construction and the Chief Engineer and the General Manager are to be German subjects. Our contemporary added that it is estimated that the capital required will be seventy to eighty million marks.

THE HANKOW-ICHANG RAILWAY

It is stated that it has been decided that the terminus of the Hankow-Ichang Railway will be at Hankow and not at Kwangshui on the Peking-Hankow line. It is possible that the route may run parallel with the Peking line as far as Siaokan. That question has yet to be decided. The engineers have not decided either where the railway is to cross the river Han. The route of the railway beyond Ichang is also undecided. Mr. Beckwith, the late chief engineer, recommended a new route, but he has now left the service, and the survey is in the hands of the new acting chief, Mr. Randolph, who was Mr. Beckwith's assistant.

division it will be $2 per hundred catties. The collection of the tax shall be completed in one payment at the place of production without regard to the destination to which the salt is transported, and no further taxes shall be levied. For the purposes of taxation scales, weights and measures are to be standardised, but pending their promulgation, the "Ssuma" scales will be used. By these scales 16.8 ling equal one catty; 100 catties equal one picul, and 16 piculs equal one English ton. The provisions of the regulations briefly referred to above are to be carried into effect in all the provinces of China in which salt is produced or consumed, excepting Mongolia, Chinghai, Sinkiang (New Dominion), Tibet and Leased Territories, which are considered as special districts. The activities along reform lines are distinctly encouraging and indicate that the Government is earnest in its efforts to place this valuable source of revenue upon a sound foundation, and now that the President is centralising the power of the Government there is every reason to suppose that progress will be real if political factions can be persuaded that what is being done is for the best interests of the people.

It is of interest to note that at the end of the year $9,000,000 from salt revenue had been lodged in the Group banks, $1,000,000 of which came from Kwangtung province.

"STARVING CHINA'S RAILWAYS"

The following is a free translation of a letter that we have received from the Premier, Mr. Hsiung Hsi-ling:—

In the FAR EASTERN REVIEW recently appeared an article criticising the administration of the Chinese Government Railways. This article had special relation to the provision of additional rolling stock. The Government recognises that the extension of all railway traffic depends mostly upon the provision of sufficient cars; that may be termed a a fundamental requirement.

Of late in regard to any application for the provision of extra cars the Government has done its best to comply therewith except when the request has come at a time of financial stress.

Since the establishment of the present Ministry the revenue raised from the different railways during the first and second years of the Republic for the purchase of extra cars has amounted to over $15,000,000, which is double that raised in the time of the Yen Chuan-pu; still there appears to be an insufficient number of cars to meet the requirements of the traffic. The reasons for this are:—

(1). The lines are constantly being extended and the cars cannot keep pace with this growth.

(2). The transport of soldiers and military supplies occasions delays to ordinary merchandise.

It is impossible at present to devote more money than is being allotted as shown above for the purchase of additional cars, as otherwise it would be difficult to make the necessary repayments of interest and capital on foreign and domestic railway loans. Other departments are in need of money, and if additional amounts were demanded for purchase of cars difficulties would be created.

The FAR EASTERN REVIEW also suggested that the Government relied wholly on the revenue from the various railways under the Board of Communications for revenue for general purposes. This is not so, although the Government was sometimes in need of railway revenues for other purposes. The Ministry of Finance does not help the Board of Communications to the extent of one cash; how then can the Board get money to meet other demands than those for railway requirements?

Table showing the extra purchases of cars by the Government Railways for 1st and 2nd Year of the Republic:

	1st year	2nd year
Peking-Mukden Railway	$ 787,540	$ 670,000
Peking-Hankow	$4,082,300	$1,570,303
Tientsin-Pukow	$1,767,070	$ 158,100
Cheng-Tai	$ 340,000	$ 600,000
Tao-Tsiu	$ 26,061	$ 168,000
Kuang-Chu	$ 503,700	$ 508,241
Chi-Shang	$ 818,667	$ 465,400
Chu-Ping	$ 120,000	$ 42,000
Peking-Kalgan	$1,150,000	$ 540,000
Shanghai-Nanking	.. ..	$ 978,800
Grand Total.....		$15,294.182

JAPAN'S MACHINERY IMPORTS

The U. S. Consul-General at Yokohama, Mr. Thomas Sammons, writes in *Daily Consular and Trade Reports*:—

Japan is buying a steadily increasing amount of foreign machinery and engines, the total purchases for 1912 aggregating $14,175,689.

During the past three years the sale of products of this kind that were manufactured in the United States nearly doubled, the increase in 1911 over 1910 being upward of $1,300,000. Nevertheless, it is well known among the expert representatives of the various competing countries that in some lines—particularly in cement and paper-making machinery—European manufacturers have of late been securing orders that were actively solicited by American concerns. In other lines, however, the American manufacturers have steadily increased their exports thither, as is shown by the fact that their total sales to Japan in 1912 amounted to $3,442,324, as compared with $3,144,499 in 1911.

TOTAL IMPORTS—TRADE IN DYNAMOS AND MOTORS

The total importations of machinery and engines into Japan for 1910, 1911, and 1912 may be summarized as follows:—

Imported from	1910	1911	1912
United States..	$1,807,667	$3,144.499	$3.442,324
Belgium	41,414	43,117	66,533
Germany.....	1,150,906	3,289,326	3,214,779
Great Britain..	4,636,470	6,193,616	7,104,011
Other countries	172,688	312,428	348,342
Total....	7,838,145	12,982,986	14,175,989

Of dynamos, motors, and transformers nearly 50 per cent. of Japan's total imports in 1912 came from the United States. The competition in this particular line has been decidedly brisk, a summary of the results for three years being as follows:

Imported from	1910	1911	1912
United States..	$449,256	$901,974	$712,060
Germany.....	315,932	1,372,046	535,893
Great Britain..	304,236	538,219	338,164
Other countries	22,153	31,937	6,763
Total....	1,091,577	2,844,176	1,592,880

TURBINES, ETC.—SEWING MACHINES

The total imports of metal and wood working machinery into Japan reached nearly $2,000,000 in 1912, Great Britain leading with $1,117,421, the United States coming next with $510,163, and Germany being represented by $307,676. The bulk of the spinning machinery used in Japan continues to come from England ($702,423 out of a total of $807,672), although American manufacturers are increasing their sales. Germany has a large share of the water turbine and Pelton wheel trade in Japan, the steam turbine business being divided between the United States, England, and Germany. Of Japan's pump imports during 1912 England supplied $176,220 worth, the United States $80,208, and Germany $67,952.

Of a total of $602,782, representing Japan's purchases of foreign sewing machines, the United States is credited with $458,298, British America (also representing American interests) $105,903, Great Britain $26,589, and Germany $10,216. German sewing machines, even though cheap, are not proving satisfactory in Japan, and the trade has steadily declined during the past few years. At the same time American manufacturers, with up-to-date American representation on the spot, have increased their sales from $160,126 in 1910 to $458,298 in 1912. Japan's imports of sewing machines for the last three years were as follows:

Imported from	1910	1911	1912
United States....	$160,126	$410,334	$458,298
Great Britain....	9,171	24,591	26,589
Germany.....	31,507	23,326	10,216
British America .	.....	62,981	105,903
Others	37,495	939	1,776
Total.....	238,299	522,171	602,782

OTHER ARTICLES THAT FIND A MARKET

Other articles in the machinery, engine, and boiler class that find a market in Japan, together with the total imports during 1912, are: Steam boilers, $585,008; blowing machinery, $233,497; cranes, $452,866; dynamos, combined with motive machinery, $469,161; gas and oil engines, $602,319; steam engines, $179,021; gas compressors, $212,525; locomotives $399,158; paper-making machinery, $67,759; tissue finishing machinery, $161,011; weaving machinery, $273,024; portable steam engines and road rollers $16,000; blocks, and chain blocks, $48,000; diving apparatus, $12,000; hydraulic presses, $45.000; knitting machines, $34,000; dyeing and bleaching machines, $3,400; sugarmaking machines, $4,300; ice-making machines, $65,000; printing machines, $33,000.

In many instances the Japanese are themselves manufacturing machinery, and to that end considerable quantities of machine tools and appliances are being imported.

The Russian Government has granted to Vickers, Limited, in conjunction with the leading banks of St. Petersburg, a concession for the establishment of extensive new gun works at Tsaritsyn, on the banks of the Volga. Orders to the value of about £1,000,000 have already been received.

CHINA'S RAILWAY BUDGET

ESTIMATES FOR THE YEAR BEGINNING JULY, 1913, AND ENDING JUNE, 1914

The following is a translation of the Budget for the railways under the control of the Government of the Republic of China for the year beginning with July, 1913, and ending with June, 1914. The document was prepared by the Railway Bureau of the Board of Posts and Communications:—

The system of railways at present under the control of the Government were constructed mainly with the aid of foreign loans contracted during the Ching Dynasty. In accordance with the agreements under which the loan monies were obtained the supervision of construction, traffic, and accounting have been in the hands of foreigners, and the Government has, therefore, not been able fully to exercise its rights—and will be unable to do so until the loans are paid off. Difficulties have consequently been great in the preparation of a budget, and we feel that the present one is not so satisfactory as it might otherwise have been. Uniformity in data secured has been impossible owing to the fact that a different system of accounts exists on every railway, but prior to the compilation of this budget temporary uniformity was attempted by the despatch of forms to the various railways to be filled in. Though that design appeared to be desirable it did not meet with approval in all quarters.

This Budget has been made up from the figures of the previous year. While formerly the remittances made to the Ministry of Communications by various railways were devoted to the purposes of the railways so contributing, they have of late been utilised by the Ministry for the maintenance of the whole Board. Under the heading of Traffic there appears an increase. As funds for the administration of the various railways have been provided for in the various agreements they have been entered under the heading of traffic expenditure. Likewise the funds necessary for the maintenance of students and railway schools are entered under the same heading. Most of the materials for railway construction have been purchased from foreign countries, the lack of development of Chinese industries preventing purchases being made to any great extent in this country.

Under the heading of Traffic the receipts from the various railways are estimated at $45,258,541, and the expenditure is estimated at $34,355,052, showing an estimated surplus of $10,933,489, which, in comparison with the previous year (July, 1912, to June, 1913) is an increase of about $6,600,000.

The newly-opened Tientsin-Pukow railway showed a deficit of $1,030,000 for the previous year, but it is estimated that there will be a surplus of $8,000,000 for the year under consideration.

Under the heading of Capital the total receipts are estimated at $1,038,920, while the expenditure is placed at $22,146,622. The Shanghai-Nanking railway is not considered in this item. There is a deficiency of $20,203,702, but that includes the repayment of something over $4,020,000 on behalf of the Peking-Mukden, Peking-Hankow, and Shansi railway loans; construction expenses of more than $2,700,000 for the Kalgan-Sui-yuan extension; and expenses of over $3,680,000 for completion of work on the Tientsin-Pukow and Kirin-Changchun lines. The remaining $10,000,000 will be devoted to the extension of construction work on branches, the building of cars and the purchase of railway materials.

Vice-President Li Yuan-hung, whose departure from Wuchang to Peking was regarded as one of the most significant events that occurred during December. His departure from Wuchang was held to indicate a belief that the "strong hand" was no longer required there, and that the rumours of friction between him and President Yuan Shih-kai were without foundation.

As figures in connection with the various railways are calculated mostly in pounds sterling or francs it is impossible, owing to variations in exchange, to make the figures tally with the actual ones. Following are the estimates for the various railways:—

Estimated Traffic Receipts

Ching-Feng	Line	(Peking-Mukden)	$ 12,180,000
Ching-Han	"	(Peking-Hankow)	15,651,200
Ching-Pu	"	(Tientsin-Pukow)	7,349,140
Cheng-Tai	"	(Shih Chia-chuang to Taiyuanfu)	2,434,000
Tao-Ching	"	(Taokow-Chinghua)	563,100
Hu-Ning	"	(Shanghai-Nanking)	3,025,000
Kuang-Chiu	"	(Canton-Kowloon)	724,000
Chi-Chang	"	(Kirin-Changchun)	506,339
Chu-Ping	"	(Chuchow-Pinghsiang)	579,230
Ching-Chang	Line	(Peking-Kalgan)	$1,858,121
Chang-Sui	"	(Kalgan-Suiyuan)	388,411
		Total	$ 45,258,541

Estimated Traffic Expenditure.

Ching-Feng	Line	(Peking-Mukden)	$5,743,652
Ching-Han	"	(Peking-Hankow)	8,350,768
Ching-Pu	"	(Tientsin-Pukow)	9,286,409
Cheng-Tai	"	(Shansi)	1,821,750
Tao-Ching	"	(Taokow-Chinghua)	811,830
Hu-Ning	"	(Shanghai-Nanking)	3,486,000
Kuang-Chiu	Line	(Canton-Kowloon)	1,629,131
Chi-Chang	Line	(Kirin-Changchun)	103,033
Chu-Ping	Line	(Chuchow-Pinghsiang)	421,353
Ching-Chang	Line	(Peking-Kalgan)	1,088,840
Chang-Sui	Line	(Kalgan-Suiyuan)	349,757
		Total	$ 34,072,523

Extraordinary Traffic Expenditure.

Ching-Feng	Line	(Peking-Mukden)	$ 137,029
Kuang-Chiu	Line	(Canton-Kowloon)	3,500
Ching-Chang	Line	(Peking-Kalgan)	62,000
Chang-Sui	Line	(Kalgan-Suiyuan)	50,000
		Total	$ 252,529

The difference between the Traffic Receipts and Expenditure shows a surplus of $10,933,489.

Extraordinary Capital Receipts

Ching-Feng	Line	(Peking-Mukden)	$ 20,000
Ching-Han	Line	(Peking-Hankow)	21,000
Ching-Pu	Line	(Tientsin-Pukow)	520
Hu-Ning	Line	(Shanghai-Nanking)	1,390,000
Kuang-Chiu	Line	(Canton-Kowloon)	500,000
Chu-Ping	Line	(Chuchow-Pinghsiang)	7,400
		Total	$ 1,938,920

Annual Capital Expenditure.

Ching-Feng	Line	(Peking-Mukden)	$ 670,000
Ching-Han	Line	(Peking-Hankow)	2,870,000
Cheng-Tai	Line	(Shansi)	483,000
		Total	$ 4,023,000

Annual Extraordinary Capital Expenditure

Ching-Feng	Line	(Peking-Mukden)	$ 1,309,280
Ching-Han	"	(Peking-Hankow)	6,833,252
Ching-Pu	"	(Tientsin-Pukow)	2,494,950
Cheng-Tai	"	(Shansi)	810,210
Tao-Ching	"	(Taokow-Chinghua)	186,000
Hu-Ning	"	(Shanghai-Nanking)	1,153,400
Kuang-Chiu	"	(Canton-Kowloon)	562,041
Chi-Chang	"	(Kirin-Chanchun)	1,190,700
Chu-Ping	"	(Chuchow-Pinghsiang)	224,000
Ching-Chang	"	(Peking-Kalgan)	662,068
Chang-Sui	"	(Kalgan-Suiyuan)	2,702,721
		Total	$ 18,128,622

The difference between Capital Receipts and Expenditures shows a deficit of $20,212,702.

July 2nd year to June 3rd year — BUDGET ON TRAFFIC AND CAPITAL OF THE GOVERNMENT RAILWAYS — (showing their profit and loss).

Names of Lines	Traffic		Capital		Traffic and Capital	
	Profit	Loss	Profit	Loss	Profit	Loss
Ching-Feng	$6,299,319			$1,959,280	$4,340,039	
Ching-Han	$7,300,432			9,682,252		$2,381,820
Ching-Pu		$1,937,269		2,494,430		4,431,699
Cheng-Tai	612,250			1,293,210		680,960
Tao-Ching		248,730		186,000		434,730
Hu-Ning		461,000	$236,600			224,400
Kuang-Chiu		908,631		62,041		970,672
Chi-Chang		596,694		290,706		1,787,394
Chu-Ping	177,877			216,600		38,723
Ching-Chang	707,281			662,068	45,213	
Chang-Sui		11,346		2,702,721		2,714,067
Total	$15,097,159	$4,163,670	$236,600	$20,449,302	$4,385,252	$13,664,465
Comparison with 1912-13	$10,933,489			$20,212,702		$9,279,212

PEKING-MUKDEN RAILWAY

The actual expenditure during the previous three years is taken as a basis. In this budget the estimated receipts under the heading of Traffic is $10,180,000, a decrease when compared with the previous year. The ordinary and extraordinary expenditure under Traffic are estimated to amount to a little over $5,880,000. This includes $4,440,000 under the headings of General, Traffic, Shop-working and Maintenance, which in comparison with the previous year shows an excess of $70,000, due to the fact that costs of materials to be purchased have been fixed on a very conservative basis, owing to the gradual rise of prices. Extraordinary expenditure is estimated at $137,029, which is to be devoted solely to workshop and maintenance purposes.

Estimated receipts and expenditure show a profit of a little over $4,290,000, of which $1,950,000 is estimated as Capital expenditure.

Owing to financial stringency restrictions in the way of furnishing rolling stock and expenditure on workshops and maintenance have been compulsory. We have been compelled to leave out of consideration in this budget any matters that might be postponed. With regard to rolling stock, however, it is impossible to delay further, and the cost will be spread over several years. A sum of $1,130,000 has been estimated for rolling stock and engineering purposes, and $670,000 will go to the repayment of loans.

Expenditure on maintenance is fixed at about $100,000.

Details of Estimated Traffic Receipts.

1.	Coaching	Total	$ 12,000,000
	(a) Passengers		5,400,000
	(b) Freight		6,600,000
2.	Miscellaneous	Total	$ 180,000
	(a) Rental		150,000
	(b) Interest		20,000
	(c) Miscellaneous		10,000

Details of Estimated Traffic Expenditure

1.	General	Total	$ 833,710
	(a) Salaries or wages		429,800
	(b) Running expenses		120,000
	(c) Miscellaneous		283,910
2.	Traffic	Total	$ 680,000
	(a) Salaries or wages		546,000
	(b) Running expenses		72,000
	(c) Miscellaneous		62,000
3.	Workshop	Total	$ 1,823,400
	(a) Salaries or wages		308,000
	(b) Running expenses		657,700
	(c) Maintenance		802,700
	(d) Miscellaneous		55,000
4.	General Maintenance	Total	$ 1,103,742
	(a) Salaries or wages		178,110
	(b) Running Expenses		7,350
	(c) Maintenance		847,577
	(d) Miscellaneous		70,705
5.	Interest on Loans.	Total	$ 1,118,000
	(a) British and Chinese Corporation	24th, 25th	$1,100,000
	(b) South Manchuria Railway	6th, 7th	18,000
6.	Running Expenses for the Ministry of Communications	Total	$ 67,200
7.	Educational Fee for Students abroad.	Total	$ 117,600
	(a) European and American Students		42,000
	(b) Tang-Shan Railway and Mining Institution		75,600

The total expenditure under Traffic is estimated at $5,743,652

Details of Estimated Extraordinary Expenditure

	Total	$137,029
(a)	Workshop	$ 57,000
(b)	Maintenance	80,029

The grand total of estimated traffic expenditure reaches $5,880,681

The difference between the estimated Receipts and Expenditure on traffic shows a profit of $6,299,319

Details of Estimated Extraordinary Capital Receipts

1.	Sale of Waste or useless stuff	Total	$ 20,000

Details of Estimated Capital Expenditure

1.	Repayment of Loans	Total	$ 670,000
	(a) British and Chinese Corporation, 9th		650,000
	(b) South Manchuria Railway Co., 6th and 7th		20,000

Details of Extraordinary Capital Expenditure

1.	Car Buildings	Total	$ 670,010
	(a) Locomotives		181,210
	(b) Passenger Cars		143,000
	(c) Goods wagons		345,800
2.	Machinery supplies	Total	$ 81,300
	(a) Tang-shan Workshop		68,400
	(b) Maintaining Department		1,200
	(c) Telegraphic „		11,700
3.	Extension of Engineering work.		
	(a) Engineering work for internal sections		156,480
	(b) Engineering work for external sections		52,850
	(c) Engineering work for eastern sections of Feng-Tien		98,640
	(d) Removing the city wall at Cheng-Yang-Mong and filling up the moat thereabout		250,000

The estimated extraordinary Capital expenditure totals $1.309,280. The grand total reaches $1,979,280. The difference between the annual Capital Receipts and Expenditure shows a deficiency of $1,959,280.

PEKING-HANKOW RAILWAY

Traffic receipts are estimated at $15,651,200 which, in comparison with the previous year, will give a surplus of $3,000,000.

Expenditure is estimated at $8,350,768 and exceeds that of the previous year under "General Expenses" by $70,000, "Traffic Expenses" by $100,000 and "Maintenance Expenses" by $200,000.

Extraordinary Capital expenditure is estimated at $6,800,000. As we have to make the railway prosperous we have to make ample provision for operating expenses.

The estimates of receipts and expenditure shows a profit of $7,300,432.

Estimated Traffic Receipts

1.	Coaching receipts	Total	$ 15,332,750
	(a) Passengers		3,636,750
	(b) freight		11,696,000
2.	Miscellaneous receipts	Total	$ 318,450
	(a) Rental		263,680
	(b) Interest		25,000
	(c) Miscellaneous		29,770
	The total amounts to		15,651,200

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total	$ 605,486
(a) Salaries or wages		360,580
(b) Running expenses		64,586
(c) Miscellaneous		180,320
2. Traffic expenses	Total	$ 891,872
(a) Salaries or wages		497,040
(b) Running expenses		154,530
(c) Miscellaneous		240,302
3. Workshop expenses		1,613,010
(a) Salaries or wages		252,360
(b) Running expenses		627,780
(c) Reserve expenses		672,120
(d) Miscellaneous		60,750
4. Maintaining expenses		1,643,400
(a) Salaries or wages		516,000
(b) Running expenses		14,400
(c) Reserve expenses		994,800
(d) Miscellaneous		118,200
5. Interest on domestic and foreign loans		3,478,400
(a) Hongkong Shanghai, and French banks		2,563,000
(b) Interest on loan from the Ministry of Communications for the redemption of the railway		411,000
(c) Interest on Szechuan-Hankow Railway loan		102,900

According to the agreement the repayment of the capital shall be commenced in 1912, but owing to financial stringency, that cannot be done.

(d) Interest on domestic loan	401,500
6. Contribution for the Ministry of Communications	67,200
7. Contribution for students abroad	51,400
(a) For European students	42,800
(b) For students in other countries	8,600

The above-stated estimated expenditure totals $8,350,768.

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Waste material sold	21,000

ESTIMATED CAPITAL EXPENDITURE

1. Repayment of loans	2,870,000
(a) Repayment to the Ministry of Communications of the loan for the redemption of this railway	1,370,000
(b) Due Repayments for the previous two terms of the loan made from the Ministry for the redemption of this railway amounting to $2,740,000 have not been made on account of financial stringency. These two repayments are still to remain in this term, so they are not entered or fixed under the heading of Capital Annual expenditure of this budget.	
(c) Repayment of Szechuan-Hankow Railway loan	$1,500,000
The above-stated estimated Capital expenditure totals	$2,870,000

MR. LIANG CHI-CHAO, Minister of Justice, who prepared the comprehensive statement of China's policy which appeared in the November issue of the FAR EASTERN REVIEW

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Addition of Rolling Stock	$ 1,510,302
(a) Locomotives	108,300
(b) Passenger and Service Cars	378,950
(c) Goods wagons	1,023,053
2. Machinery supplies	923,233
(a) Traffic Dipartment	46,725
(b) Workshop	178,600
(c) Maintenance Department	86,950
(d) Balance due on machinery supplies ordered in 1912, amounting to	615,958
3. Extension of engineering works	2,164,699
(a) General office	17,500
(b) Traffic Department	670,005
(c) Workshop	97,544
(d) Maintenance Department	129,650
(e) Pulling down the city wall at Ching-Yang-Mong, and filling up the moat thereabout	250,000
(f) Precaution expenses for the Huang-ho (Yellow River) bridge	1,000,000
4. Branch Construction	2,100,000
(a) Projected line between Chow-kiahow and Yea-chen	1,750,000
(b) Projected line between Chang-Sin-Tien and Ta-Whe-chuang	350,000
5. Balance due on land purchased at Hupeh	122,017
6. Customs duties on railway materials	8,000

The total of estimated extraordinary expenditure is $6,833,252.

The grand total of the estimated expenditure under the heading of capital is $9,703,252.

The difference between the estimated receipts and expenditure on capital gives a deficit of $9,682,252

TIENTSIN-PUKOW RAILWAY.

ESTIMATED TRAFFIC RECEIPTS

1. Coaching	Total	$ 7,177,780
(a) Passenger Cars		3,186,620
(b) Goods "		3,991,260
2. Miscellaneous	Total	$ 171,260
(a) Rental		25,087
(b) Interest		Nil
(c) Miscellaneous		146,173

The total traffic receipts is estimated at $ 7,349,140

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total	$ 1,127,543
(a) Salaries or wages		688,633
(b) Running expenses		114,048
(c) Miscellaneous		324,862
2. Traffic expenses	Total	$ 638,325
(a) Salaries or wages		474,191
(b) Running expenses		92,014
(c) Miscellaneous		72,120
3. Workshop	Total	$ 1,671,094
(a) Salaries or wages		294,604
(b) Running expenses		664,322
(c) Reserve expenses		666,268
4. Maintenance expenses	Total	$ 1,089,977
(a) Salaries or wages		458,944
(b) Running expenses		30,220
(c) Reserve expenses		582,275
(d) Miscellaneous		18,538
5. Interest on Loan	Total	$ 4,699,470
(a) German-Chinese Bank		3,225,000
(b) Chinese Central Rail-Co.		1,474,470
6. Contribution for the Ministry way of Communications	Total	$ 60,000

The total amount estmated for traffic expenditure is $9.286,409.

The difference between the estimated traffic receipts and expenditure shows a deficit of $1,937,269.

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Sale of iron and wooden oil barrels.	$ 520

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling Stock.	Total	$ 958,100
(a) Locomotives		300,000
(b) Passenger Cars		312,000
(c) Goods wagons		262,500
(d) Increase of rolling stock for the southern Section		83,600
2. Machinery Supplies	Total	$ 16,000
(a) Machine tools for engine-repairing purpose for Tsenan Workshop		5,000
(b) Machine tools for Locomotives and Passenger and Goods wagons for the Southern Section		11,000
3. Construction work	Total	$ 1,520,850
(a) Tsinan-fu and Pukow		1,440,850
(b) Along the whole line		80,000

The above-quoted extraordinary capital expenditure amounts to $2,494,950.

The difference between estimated Receipts and Expenditure on capital shows a deficit of $2,494,430.

Explanation.—1. The construction work of this line has just been completed. The unification of the northern and southern sections has now been completed, but it is impossible to estimate receipts, except on the basis of the present current receipts.

2. Since traffic has only recently been opened on the whole line, the estimate of expenditure is approximate.

SHANSI (CHENG-TAI) RAILWAY

Estimated Traffic Receipts

1.	Coaching	Total	$ 2,400,000
	(a) Passengers		500,000
	(b) Freight		1,900,000
2.	Miscellaneous	Total	$ 34,000
	(a) Rental		26,000
	(b) Interest		4,500
	(c) Miscellaneous		3,500

The total amounts to $2,434,000

Estimated Traffic Expenditure

1.	General expenses	Total	$ 186,900
	(a) Salaries or wages		134,700
	(b) Running expenses		33,900
	(c) Miscellaneous		18,300
2.	Traffic Expenses	Total	$ 156,300
	(a) Salaries or wages		126,500
	(b) Running expenses		11,200
	(c) Miscellaneous		18,600
3.	Workshop expenses	Total	$ 397,550
	(a) Salaries or wages		120,700
	(b) Running expenses		140,350
	(c) Reserve expenses		117,200
	(d) Miscellaneous		19,300
4.	Maintenance expenses	Total	$ 255,700
	(a) Salaries or wages		166,000
	(b) Running Expenses		1,700
	(c) Reserve expenses		112,500
	(d) Miscellaneous		15,500
5.	Interest on Loans	Total	$ 800,000
6.	Contribution for the Ministry of Communications	Total	$ 20,160
7.	Contribution for support of Students	Total	$ 5,140
	(a) Students abroad		3,140
	(b) Railway school		2,000

The above-quoted Expenditure totals $1,821,750

The difference between receipts and expenditure shows a profit of $612,250

Estimated Capital Expenditure

1.	Repayment of Loan	Total	$ 483,000

Estimated Extraordinary Capital Expenditure

1.	Increase of Rolling Stock	Total	$ 600,000
	(a) Locomotives		250,000
	(b) Passenger cars		Nil.
	(c) Goods wagons		350,000
2.	Increase of Machinary Supplies	Total	$ 125,810
	(a) (旋盤水磅)		13,400
	(b) Rails		18,710
	(c) Iron Pipes		3,700
	(d) Store Materials		70,000
	(e) Funds for precaution		20,000
3	Extension of construction work	Total	$ 44,400
	(a) Station work		9,250
	(b) Increase and repairs of buildings for the line		30,750
	(c) Engineering work		4,370
4.	Extraordinary expenses	Total	$ 40,000
	(a) Repairs of Locos		40,000

The above-quoted annual extraordinary capital expenditure totals $810,210.

The total amount of the estimated capital expenditure is $1,293,210.

Explanation.—The annual receipts, in comparison with the estimate for 1912, shows an increase of a little over $300,000, but in comparison with the actual receipts for 1912 is a decrease of some ten thousands of dollars. The present increase is due to the fact that we have over-estimated the transportation of coal and under-estimated freight from cereals. The increase of six locomotives and one hundred coal wagons under the heading of capital expenditure is for the purpose of developing traffic. In viewing the progress of the traffic business, and the prosperity of the transportation affairs of this line the extension of construction work therefrom is inevitable. An increase of turntables and other important adjuncts are still under consideration and negotiation, so they have not been estimated in this budget.

TAOKOW-CHINGHUA RAILWAY.

Estimated Traffic Receipts.

1.	Coaching Receipts	Total	$ 555,000
	(a) Passengers		100,000
	(b) Freight		455,000
2.	Miscellaneous.	Total	8,100
	(a) Rental		8,000
	(b) Interest		Nil.
	(c) Miscellaneous		100
	The above-quoted Receipts total		563,100

Estimated Traffic Expenditure.

1.	General expenses.	Total	75,120
	(a) Salaries or wages		56,360
	(b) Running expenses		7,160
	(c) Miscellaneous		11,600
2.	Traffic expenses	Total	45,500
	(a) Salaries or wages		29,000
	(b) Running expenses		10,500
	(c) Miscellaneous		6,000
3.	Workshop expenses	Total	124,000
	(a) Salaries or wages		24,600
	(b) Running expenses		43,200
	(c) Reserve expenses		56,200
	(d) Miscellaneous		Nil.
4.	Maintenance expenses	Total	149,500
	(a) Salaries or wages		9,000
	(b) Running expenses		1,000
	(c) Reserve expenses		138,500
	(d) Miscellaneous		1,000
5.	Interest on Loans	Total	408,110
	(a) Foh Company (福公司)		401,000
	(b) Ministry of Communications		7,110
6.	Contribution for the Ministry of Communications		9,600

The above-quoted expenses total $811,830

The difference between receipts and expenditure under the heading of Traffic shows a deficit of $248,730

Estimated Extraordinary Capital Expenditure.

1.	Increase of Rolling stock	Total	$ 168,000
	(a) Locomotives		Nil.
	(b) Passenger Cars.		Nil.
	(c) Goods wagons		168,000
2.	Extension of construction work	Total	$ 18,000
	(a) Station work		18,000

The above-quoted extraordinary expenditure totals $186,000

Explanation.—The estimate of traffic receipts of $516,500 made for July 1912 to June 1913, is exceeded by $39,000 in the estimate for 1913-14, that being due to an increase in the receipts from passengers.

3. The estimate of expenditure made for July 1912 to June 1913 amounted to about $880,000. We make it less by $70,000 for this term.

SHANGHAI-NANKING RAILWAY.

This line is in close competition with navigation by numerous waterways. We have tried to devise means to divert traffic from those routes, but financial stringency has prevented an adequate development of transportation facilities in the shape of an increase of rolling stock, etc. The various items under the heading of Capital were included in last estimate, but so far they have not been carried out. The most important items are the increase of rolling stock and the construction of sub-lines at Nanking station. Work at Chinkiang station is also important. The expenditure now estimated exceeds that of the previous year by $80,000, which amount is for the erection of a goods depôt at Nanking station.

Estimated Traffic Receipts.

1.	Coaching	Total	$ 2,975,000
	(a) Passengers		2,300,000
	(b) Freight		675,000
2.	Miscellaneous		50,000
		Grand Total	$ 3,025,000

ESTIMATED TRAFFIC EXPENDITURE.

1. General expenses	Total $	424,500
(a) Salaries or wages		238,000
(b) Running expenses		24,500
(c) Miscellaneous		162,000
2. Traffic expenses.	Total $	464,500
(a) Salaries or wages		260,000
(b) Running expenses		82,500
(c) Miscellaneous		122,000
3. Workshop expenses	Total $	654,000
(a) Salaries or wages		66,000
(b) Running expenses		379,500
(c) Reserve expenses		196,500
(d) Miscellaneous		12,000
4. Maintenance Expenses	Total $	282,000
(a) Salaries or wages		72,300
(b) Running expenses		4,100
(c) Reserve expenses		200,200
(d) Miscellaneous		5,400
5. Interest on Loans	Total $	1,595,000
6. Contribution for the Ministry of Communications		66,000

The above-quoted estimated traffic expenditure totals $3,486,000

The difference between receipts and expenditure shows a deficit of $461,000

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS.

1. Contribution of Land-purchasing shares. Total $ 1,390,000.

Remarks: Owing to financial stringency, the increase of rolling stock and the extension of construction work for the benefit of the line have either been set aside or postponed. It is now proposed to effect or to make a contribution of land-purchasing shares, the funds from which are to be used for the repayment of the money that the Government has paid for the purchase of land for the line.

The funds shall be assigned to this line for the increase of rolling stock and the extension of construction work. The funds total £150,000, which is equivalent to $1,390,000.

The above-mentioned proposal has not yet been approved, and we include it in the estimates only provisionally,

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of rolling stock	Total $	978,800
(a) Locomotives		264,300
(b) Passenger Cars		161,000
(c) Goods wagons		553,500
2. Increase of Machinery supplies	Total $	17,600
(a) For Locomotives		10,600
(b) For Construction		7,000
3. Extension of Construction work	Total $	157,000
(a) Roadbed		25,000
(b) Stations and Workshop		132,000

The above-quoted extraordinary expenditure totals $1,153,400.

The difference between Capital receipts and expenditure shows a profit of $236,600.

CANTON-KOWLOON RAILWAY (KUANG-CHIU)

ESTIMATED TRAFFIC RECEIPTS

1. Coaching Receipts	Total $	720,000
(a) Passengers		650,000
(b) Freight		70,000
2. Miscellaneous	Total	$ 4,000
(a) Rental on land		2,000
(b) Interest		Nil
(c) Miscellaneous		2,000

The above-quoted Receipts total $724,000

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total $	209,416
(a) Salaries or wages		154,446
(b) Running expenses		12,608
(c) Miscellaneous		42,362
2. Traffic expenses	Total $	101,746
(a) Salaries or wages		88,568
(b) Running expenses		9,848
(c) Miscellaneous		3,330
3. Workshop expenses	Total $	237,603
(a) Salaries or wages		50,478
(b) Running expenses		134,520
(c) Reserve expenses		45,180
(d) Miscellaneous		7,425
4. Maintenance expenses	Total $	132,516
(a) Salaries or wages		93,276
(b) Running expenses		3,040
(c) Reserve expenses		31,600
(d) Miscellaneous		4,600
5. Interest on Loans	Total $	914,250
(a) British and Chinese Corporation		902,250
(b) Bonus		12,000
6. Contribution for the Ministry of Communications		33,600

The above-quoted expenditure totals $1,629,131.

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE

1. Lawyer's fee	$ 2,500
2. Compensation fee	$ 1,000
Total	$ 3,500

The final total of traffic expenditure amounts to $1,632,631

The difference between traffic receipts and expenditure shows a deficit of $908,631

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Provisional Loan from the British and Chinese Corporation	$ 50,000

Remark.—An agreement has been ratified for the said loan of £50,000. It is agreed that out of the loan £35,000 is to be used for purchasing rolling stock, and the remaning £15,000 is to be used for repaying the cost of cars which were purchased from the Peking-Mukden Line. Those cars are taken as the security for the loan. The loan bears interest at 7% annually, and its duration is fixed at two years.

The repayment may be made at one time, or in four instalments.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling stock	Total $	508,241
(a) Locomotives		125,000
(b) Passenger cars		72,000
(c) Goods wagons		138,000
(d) Cost of cars built by Peking-Mukden Railway		173,241
2. Increase of Machinery supplies	Total $	8,000
(a) For stations		8,000
3. Extension of Construction work	Total $	39,800
(a) Ta-sar-due station		25,000
(b) Other stations		14,800
4. Miscellaneous expenses for Extension business		6,000

The above-quoted extraordinary expenditure totals $562,041

The difference between capital receipts and expenditure shows a deficit of $62,041

Explanation.—1. The annual receipts estimated for this term show an increase of about $80,000 in comparison with the estimate for the past term (July 1912 to June 1913). The coaching receipts have shown no progress, owing to several reasons: (1) deficiency of rolling stock and imperfect construction work, (2) unjust taxation by the taxation bureau, (3) lack of uniform currency.

The extraordinary capital expenditure estimated for the previous term (January to June 1913) was not utilised, so it is included in this term.

KIRIN-CHANGCHUN RAILWAY

ESTIMATED TRAFFIC RECEIPTS

1. Coaching receipts	Total $	500,099
(a) Passengers		265,289
(b) Freight		234,810
2. Miscellaneous receipts	Total $	6,240
(a) Rental		5,240
(b) Interest		Nil
(c) Miscellaneous		1,000

The above-quoted receipts total $506,339

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total $	158,040
(a) Salaries or wages		95,440
(b) Running expenses		38,000
(c) Miscellaneous		24,600
2. Traffic expenses	Total $	140,943
(a) Salaries or wages		99,930
(b) Running expenses		14,373
(c) Miscellaneous		26,640

3. Workshop expenses	Total	$ 257,800
(a) Salaries or wages		76,000
(b) Running expenses		141,800
(c) Reserve expenses		37,000
(d) Miscellaneous		3,000
4. Maintenance Expenses	Total	$ 428,000
(a) Salaries or wages		200,000
(b) Running expenses		10,000
(c) Reserve expenses		213,000
(d) Miscellaneous		5,000
5. Interest on Loan		118,250

The above-quoted expenditure totals 1,103,033

The difference between traffic receipts and expenditure shows a deficit of $596,694

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling stock	Total	$ 465,400
(a) Locomotives		216,880
(b) Passengers cars		77,120
(c) Goods wagons		171,400
2. Increase of Machinery supplies	Total	$ 32,000
(a) For workshop use		32,000
3. Extension of construction work	Total	$ 693,300

The above-quoted extraordinary expenditure totals $1,190,700

Explanation.—Since the opening of traffic on this line things have not been properly and completely arranged, and it is impossible to make out an exact estimate of the traffic receipts. We make it amount to $500,000.

CHUCHOW-PINGHSIANG RAILWAY.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching Receipts	Total	$ 575,780
(a) Passengers		77,100
(b) Freight		498,680
2. Miscellaneous	Total	$ 3,450
(a) Rental		3,038
(b) Interest		Nil.
(c) Miscellaneous		412

The above-quoted receipts total $579,230

ESTIMATED.

1. General expenses	Total	$ 62,351
(a) Salaries or wages		48,459
(b) Running expenses		5,832
(c) Miscellaneous		8,060
2. Traffic expenses	Total	$ 63,148
(a) Salaries or wages		53,884
(b) Running expenses		7,464
(c) Miscellaneous		1,800
3. Workshop expenses.	Total	$ 136,810
(a) Salaries or wages		30,966
(b) Running expenses		49,464
(c) Reserve expenses		55,120
(d) Miscellaneous		1,260
4. Maintenance Expenses	Total	$ 139,044
(a) Salaries or wages		11,584
(b) Running expenses		860
(c) Reserve expenses		125,700
(d) Miscellaneous		900

The above-quoted expenditure totals $401,353

The difference between traffic receipts and expenditure shows a profit of $177,877

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS.

1. Sale of waste	$7,400

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of Rolling stock	Total	$ 42,000
(a) Locomotives		Nil.
(b) Passenger cars		Nil.
(c) Goods wagons		42,000
2. Increase of Machinery supplies	Total	$ 23,000
(a) Workshop		23,000
3. Extension of Construction work	Total	$ 86,000
(a) Maintenance Department		86,000
4. Repayment of Loans	Total	$ 73,000
(a) The Commissioner of Finance, Hunan		45,000
(b) Peking-Mukden Railway, building of cars		28,000

The total extraordinary expenditure amounts to $224,000

The difference between Capital receipts and expenditure shows a deficit of $216,600.

Explanation.—The Coaching receipts for this term exceed by more than $200,000, those estimated for the first year (1912) of the Republic.

The extension of construction work such as the building of two steel bridges at Sian-Tung and Tun-sin has not been fixed in the estimate for this term because of the deficit between the receipts and the expenditure.

The increase of 20 large flat wagons has been left out of this estimate, and the increase of 20 large coal wagons has been halved in this estimate, that is only 10 wagons have been provided for.

PEKING-KALGAN LINE.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching	Total	$1,763,100
(a) Passengers		394,200
(b) Freight		1,368,900
2. Miscellaneous		95,021
(a) Rental on land and Cars		92,870
(b) Interest		Nil.
(c) Miscellaneous		2,151

The above-quoted receipts total $1,858,121.

ESTIMATED TRAFFIC EXPENDITURE.

1. General expenses	Total	$ 142,760
(a) Salaries or wages		103,120
(b) Running expenses		10,000
(c) Miscellaneous		29,640
2. Traffic Expenses	Total	$ 289,480
(a) Salaries or wages		134,560
(b) Running expenses		30,120
(c) Miscellaneous		124,800
3. Workshop expenses	Total	$ 396,000
(a) Salaries or wages		87,600
(b) Running expenses		198,000
(c) Reserve expenses		109 200
(d) Miscellaneous		1,200
4. Maintenance expenses	Total	$ 260,600
(a) Salaries or wages		24,000
(b) Running expenses		2,400
(c) Reserve expenses		231,800
(d) Miscellaneous		2,400

The above-estimated expenditure totals $1,088,840.

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE.

1. Preparation for	Total	$ 62,000
(a) Accidental construction work		50,000
(b) Extraordinary expenses		12,000

The above estimate totals $62,000. The final total of the traffic expenditure amounts to $1,150,840.

The difference between traffic receipts and expenditure shows a profit of $707,281.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of Rolling stock	Total	$ 540,000
(a) Locomotives		Nil.
(b) Passenger Cars		Nil.
(c) Goods wagons		540,000
2. Increase of Machinery supplies	Total	$ 13,500
(a) Workshop, Nankow		2,000
(b) " "		2,000
(c) See-Ju-Mon, Kong-Chwang, and Sha-Hwa-yuen		7,500
(d) Angle rails for Kong-Chwang and Jiu-Yong-Kwan		2,000
3. Extension of construction work	Total	$ 108,568
(a) Work for Joo-Muh and Sing Chwang Tse		12,000
(b) See-Ju-Mon to Chang-Cha-Kow work for stations		11,098
(c) Work for Chang-Cha-Kow station		270
(d) Work for Nankow		72,310
(e) Work for See-Ju-Mon		12,890

The estimated Capital expenditure totals $662,068.

Explanation.—The estimated receipts for last year averaged $150,000 monthly, but the actual receipts slightly exceeded the estimate.

The estimate of the traffic and the extraordinary traffic expenditure for the previous term was fixed at an average of $100,000 monthly. The estimate for this term is made on the basis of the actual expenditure for the first year (1912) of the Republic.

KALGAN-SUIYUAN RAILWAY.

ESTIMATED TRAFFIC RECEIPTS

1.	Traffic receipts	Total	$ 378,000
	(a) Passengers		86,400
	(b) Freight		291,600
2.	Miscellaneous Receipts	Total	10,411
	(a) Rental		8,500
	(b) Interest		Nil.
	(c) Miscellaneous		1,911
	The above estimated receipts total		388,411

ESTIMATED TRAFFIC EXPENDITURE

1.	General expenses		49,580
	(a) Salaries or wages		37,380
	(b) Running expenses		3,660
	(c) Miscellaneous		8,540
2.	Traffic expenses	Total	84,600
	(a) Salaries or wagis		38,400
	(b) Running expenses		6,000
	(c) Miscellaneous		40,200
3.	Workshop expenses.	Total	$ 94,800
	(a) Salaries or wages		22,800
	(b) Running expenses		42,000
	(c) Reserve expenses		30,000
	(d) Miscellaneous		Nil.
4.	Maintenance expenses.	Total	$ 120,777
	(a) Salaries or wages		46,500
	(b) Running expenses		2,730
	(c) Reserve expenses		69,237
	(d) Miscellaneous		2,310
	The above estimate of expenditure totals		$ 349,757

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE

1.	Funds for accidental construction or repairing work	$ 50,000

The final total of the above estimated traffic expenditure amounts to $399,757. The difference between traffic receipts and expenditure shows a deficit of $11,346.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1.	Increase of Rolling Stock	Total	$ 550,000
	(a) Locomotives		280,000
	(b) Passenger Caes		Nil.
	(c) Goods wagons		270,000
2.	Extension of construction work	Total	$ 9,864
	(a) Work for Kalgan to Yung-cha-Pao		1,852
	(b) Work for Yung-cha-Pao to Yang-Kao		8,012
3.	New construction work	Total	$ 2,142,857
	(a) Work from Yang-Kao to Tar-Tung		2,142,857

The above estimated extraordinary expenditure totals $2,702,721.

Explanation.—The estimate of permanent receipts for the previous term was made at an average of $30,000 monthly, but the actual receipts were slightly in excess of the estimate.

Extra-Increase on the Budget Already Made

PEKING-HANKOW RAILWAY

ESTIMATED TRAFFIC RECEIPTS

Freight receipts $49,547.83.

Remarks.—The Taxation Station at Fong-Tai has been abolished.

The Peking-Kalgan, Peking-Mukden and this line have agreed to pay annually the tax usually collected by the station. The abolition of the station will mean an increase on Merchandise receipts.

TRAFFIC EXPENDITURE

General expenses $49,547.83.

Remarks.—The total amount that the three mentioned railways have been ordered to pay for the Taxation Station is Tls. 100,000. This line agrees to pay Tls. 33,000, which is equivalent to $49,547.83.

The Peking-Kalgan Railway agrees to pay Tls. 34,000, or $51,049.27.

The Peking-Mukden Railway agrees to pay Tls. 33,000, or $49,547.83.

KIRIN-CHANGCHUN RAILWAY

EXTRAORDINARY TRAFFIC EXPENDITURE

1. Engineering work for the repair of the line injured by the flood during May, June, and the first part of July. Total $128,920.

TIENTSIN-PUKOW RAILWAY

TRAFFIC EXPENDITURE

1.	General expenses.	Total	$ 38,382
	(a) Salaries or wages		32,160
	(b) Running expenses		960
	(c) Miscellaneous		5,262

Remarks.—The T.-P. R. is the most important line between the North and South. The districts through which it runs, are considered to be the homes of outlaws. At times when war breaks out in the country it serves as a line especially for military affairs. Already trained railway police and railway soldiers are not sufficient in number for the protection of the line. When a policeman, or a soldier vacates his duty it is impossible to fill up the vacancy with an untrained hand. Therefore we see the necessity of enlisting more men and establishing a school in which they are to be trained. We consider such action very important especially for the time being when things are not conducive to tranquillity.

This extra estimate is made wholly for this purpose amounting to $38,382.

CHEFOO BREAKWATER

The arrival of two engineers from Holland to plan a breakwater for Chefoo Harbor brings that work a step on the way. The Commission, which consists of representatives of the Consular Body, Commissioner of Customs, Chinese Superintendent of Customs and Chinese and foreign Chambers of Commerce, have arranged for the levying of a surtax on shipping for the purposes of the work, and this fund will be collected by the Customs and placed at the disposal of the Commission for administration. The engineers will prepare plans for the breakwater, and will submit them to Peking for the consideration of the Central Government and the Diplomatic Corps. The Commission is in a sense similar to the Huangpoo Conservancy and the Hai-ho Conservancy.

It is interesting to note that an effort is being made to induce the Chinese to take steps to make the Newchwang harbor satisfactory. Great attention is needed to even keep the little trade that remains. Otherwise it will drift to Dalny as the trade of Chefoo has drifted to Tsingtao.

WIRELESS BETWEEN JAPAN AND HAWAII

A Tokyo paper reports that the Japanese Department of Communications with a view to establishing a wireless service between Japan and Hawaii, made a trial in December 1909 between the Choshi Wireless Station and that at Cafk (?) in the Hawaiian islands, a distance of 3,300 nautical miles. The power used was only 20 kilowatts, yet the message was most distinctly received by the *Korea*, which happened to be 3,150 nautical miles from Choshi.

The result greatly encouraged the Japanese authorities, who subsequently decided to erect a big wireless station at Choshi. The Cabinet has now consented to an outlay of 400,000 yen for the undertaking in the next fiscal year.

MR. CHANG WU

Mr. Chang Wu, whose portrait we give in this issue, is a native of Chekiang. Before taking his present post in association with Sir Richard Dane, he had become recognised as one of the foremost authorities on matters connected with the Salt Gabelle. During the Manchu *régime* he was engaged in the management of financial and salt affairs in the province of Fukien. The Republican Government appointed him to take charge of all matters pertaining to salt in the Three Eastern Provinces. He introduced many reforms, notably the system of direct taxation in the salt-producing districts of the province of Fengtien. The improvements in management which he made proved very efficacious and the revenue from salt taxation showed a remarkable increase.

Mr. Chang took up the post of Chang Lu Salt Commissioner in the first year of the Republic and that of Liang Hwai Salt Commissioner in the second year.

GOLD DREDGING IN ALASKA

A Washington telegram reports:—Thirty-eight gold dredges were operated in Alaska in 1912, compared with twenty-seven in 1911, according to a report of the United States Geological Survey. These dredges handled about 3,600,000 cubic yards of material, recovering gold worth $2,200,000. Since 1880 the placers of Alaska have yielded gold valued at $154,800,875. The mines have also produced $960,743 worth of silver. The placers produced in 1912 gold worth $11,990,000. (It is to be noted that the above production averages over 61 cents gold per yard. Much of the ground handled had a much higher value. Dredging costs in Alaska vary from 20 to 50 cents gold per yard according to local conditions and methods of working.)

AGRICULTURAL PROGRESS IN THE PHILIPPINES.

The Agricultural Bank was organized in the Philippines in July, 1908, and was opened for business in the following October. It had a capital of a million pesos or half million American dollars. This bank established 24 agencies in the provincial capitals, where there were no commercial banks or branches, and of these, twelve were established during the last year.

This Agricultural Bank thus established under the auspices of the American insular government of the Philippines was not established to compete with commercial institutions, but to aid in the development of the country. One of the branches was closed as soon as the regular Filipino bank located a branch there, that is in Zamboanga. As the government is behind the Agricultural Banks, certified checks on the bank are good anywhere in the Philippines, and such use of the checks is rapidly supplanting the transportation of money for the payment of debts. In its report for the agricultural year of 1912-1913 the Bank reported existing loans to the amount of a million and three quarters of pesos, an increase of 800,000 pesos over the previous year. These loans were made in 390 different transactions, 131 of them based on royal grants at 10 per cent. and 259 on Torrens titles at 8 per cent. There have been reported but twenty delinquents, and eight of these were granted extensions. The Bank lost but 100 pesos during this period, and that was on a small loan of 300 pesos properly secured but on outlying property that brought less than the mortgage. The branches are authorized to take time and current deposits, giving 3 per cent. on six months for time deposits, 3½ per cent. on 12 months. No loans are made of any money either on time or current deposit. Time deposits are sent to the head office at Manila and placed with the commercial banks at the rates of interest paid by the Agricultural Bank.

This feature of the agricultural bank's work has only been in operation for three months, and 35,000 pesos have already been deposited on time and 200,000 on current account. The general success of the bank indicated greater possibilities, and an increase in its capital of another million pesos would have been desirable, but the conclusion reached was that the money was so much needed in other directions that the enlargement of the capital would not be made, at least at present. The whole line of procedure in the Philippines, including the educational institutions in the way of experiment farms and stations, suggests the broad general policy of higher agricultural attainment that has produced such wonderful results in the United States during the last few years, and all of which influences are now in full development in that country and a similar development is promised in the Philippines.

COTTON SPINNING IN JAPAN

An enormous amount of spinning and weaving machinery was ordered from Europe and America last year, says the *Asahi*, but the arrival of machinery ordered from England has been delayed on account of the strike at the factory of Mather, Platt & Co. As the result of an agreement among the employers, a uniform rate of wages is paid, while the working hours are fixed by the Factory Act. For this reason, says the *Asahi*, it is impossible for English manufacturers to pay their men extra money and extend their working hours, or to collect the desired number of skilled labourers in any one factory. The strike affected all the other works, and the shipments of all machinery ordered for Japanese buyers has been delayed. The machinery ordered this year has been contracted for arrival by the end of the first half of next year, but in the present state of things in England, the delivery of all the machinery cannot be expected before the end of next year. Industrial business in Japan is depressed owing to the tightness of money, and manufacturers particularly are experiencing great difficulty in finding the necessary funds. If the machinery they have ordered should arrive by the time arranged, they would find it hard to pay for it, and consequently they are rather hoping for further delay. In these peculiar circumstances no trouble has arisen between importers and their clients on account of the delay in the arrival of the goods ordered, though, had such a delay occurred during a period of industrial activity, not a few complaints would have arisen.

ELECTRICAL ENTERPRISES IN JAPAN

Upon making inquiries into the condition of various electric enterprises in Japan, the *Chugai Shogyo Shimpo* remarks that at one time electric undertakings were considered to be very profitable, and capitalists were attracted to such enterprise just as ants swarm to sugar. As a result, electric works of various descriptions on a small scale have cropped up everywhere like mushrooms after a shower of rain. The failure of Mr. Saiga, of Osaka, who was regarded as the "electric king" of the Kwansai district, awakened the business public to a sense of the danger which threatened, and the amalgamation of various small electric companies in Kyushu has been brought about as a result. Enterprises like electrical concerns which tie up a tremendous amount of money, can be successfully conducted only when run on a large scale. The following result of the investigations made by the authorities in regard to the amount of capital invested and the return thereon will give an idea of the prospects of this branch of activity:—

Capital.			Number of Works.	Rates of Dividend.
Y.	50,000	and less	38	0.85
	100,000	„ „	32	0.74
	500,000	„ „	57	0.83
	1,000,000	„ „	17	0.90
	5,000,000	„ „	17	0.99
	5,000,000	„ „	3	1.03

Japan has claimed an indemnity of $980,000 from China for the incidents at Nanking arising out of the recent rebellion.

PUBLICATIONS

"Gold Dredging" by T. C. Earl (published by Spons, London) is not a highly technical work but a concise summary of the main points of the industry with tables and references and excellent illustrations of operations in many countries. It is a book which should be in the hands of every investor in gold dredging shares and is a valuable addition to the list of mining literature.

Most of the practice described is Australian and New Zealand, as the author is evidently more familiar with conditions in those countries. New Zealand is the pioneer in this branch of mining, while California has perfected the large modern installations which are in keeping with the local conditions found there and in Alaska.

Gold dredging is a most satisfactory and safe form of mining, and when properly undertaken by experienced people it is most always successful.

The weathering and wearing away of the rocks containing gold bearing veins and the carrying down and concentrating of the gold in river valleys and at the mouths of streams is a process of nature which is a most interesting one and where the gold is found so deep and under conditions where it cannot be won by others means, the dredge fulfils its mission and is designed to meet local conditions. Gold dredgers are now scattered over the world in many places and while there have been failures, in the majority of cases profits have resulted, By carefully testing the ground and weighing the conditions prevalent, estimates can be made very closely in advance so that dredging investments are removed beyond the speculative point.

With all the attention that is now being paid to gold and tin dredging it is quite noticeable that no such enterprises are found in China and though there are known areas where dredging for both metals would undoubtedly be profitable, the attitude of China towards any such modern development of her resources hitherto adopted precluded any possibility of anything being done.

Messrs. William Dawson and Sons, Bream's Buildings, London, E. C., send us their list of annual subscriptions to English, Colonial and Foreign newspapers, Magazines, etc. This is the 25th edition of this list, which is a most reliable and useful production.

RUSSO-JAPANESE RAILWAY CONNEXION.

The inauguration from January 1 of a combined freight service between the Japanese and Russian railways, remarks the *Osaka Mainichi*, will be followed by the opening of a direct service to Moscow for the transport of two or three certain classes of Japanese goods. Negotiations are now in progress for this purpose. The direct service will be first opened for raw silk and tea. Freight accommodation will be gradually improved after the working of the new service has been tested by actual working, and the list of goods transported direct between Moscow and Japan will be increased. When this arrangement is put into operation, Japanese raw silk and tea sent to Europe will be distributed through Moscow, which is expected to become an important distributing centre. Russian merchants there are already making preparations to meet the anticipated requirements of the circumstances.

THE CHEKIANG RAILWAY.

The shareholders of the Soochow Railway Company (Shanghai-Kashing line) have, in view of the continued bad business of the company, signed an agreement with the Ministry of Communications to sell the line to the Government. On account of the stringency of Government funds, the Ministry promised to pay the amount by instalments. This has met the approval of the shareholders. But a difficulty has now arisen. When Chen Chi-mei was Tutuh of Shanghai, he negotiated a loan from a Japanese firm, giving as security the above line. The loan agreement stipulated that if the loan be repaid before maturity a compensation of $150,000 should be paid to the firm. The Ministry on learning of this has asked the shareholders to settle this question among themselves.

IRON IN KOREA

A Chinnampo paper, quoted by the *Seoul Press*, states that the export of iron ore through that port from mines in Whanghai Province has been very active this year. Up to December 15, 135,263 tons were exported, already showing an increase of more than 3,000 tons as compared with the total amount exported during last year. Of the figures 44,000 tons came from Eunyul, 46,500 tons from Chailyong, 34,183 from Anak and 10,500 tons from Sinchon.

FAR EASTERN RAILWAYS

CHINA

Railways in China.—A Japanese paper reports that the entire length of the Government railways in China is 2,493 miles. The mileage of the different railway lines and the year of completion of the construction work are as given below:

Railway Lines	Mileage	Year of completion
Peking-Mukden....	252	1903
Daokao-Kyonghuai.	96	1904
Peking-Hankow....	814	1901
Tayuan-Shih-kiakai	151	1907
Huchou-Ningpo....	210	1908
Kaifeng-Honan....	140	1908
Peking-Cheng-kai kou.....	124	1909
Tientsin-Pukow....	626	1911
Kirin-Changchu....	80	1912
Total.....	2,493	

Besides the above lines, there are some extending over 2,389 miles owned by foreign companies, and others extending over 351 miles run under the management of the provinces. Thus the total mileage of the railway lines both private and public throughout China is 5,233 miles.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended November 15 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	52,360	12,127	64,487
1912....	43,042	10,108	53,150
Increase.	9,318	2,019	11,337
Decrease	—	—	—

For forty-five weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	2,121,060	454,252	2,575,312
1912....	1,975,703	358,459	2,334,162
Increase.	145,357	95,793	241,150
Decrease	—	—	—

Week ended November 22.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	54,120	14,082	68,202
1912....	43,583	10,706	53,889
Increase	10,537	3,776	14,313
Decrease	—	—	—

For forty-six weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	2,175,180	468,334	2,643,514
1912....	2,019,286	368,765	2,388,051
Increase.	155,894	99,569	255,463
Decrease	—	—	—

Week ended November 29.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	47,959	12,363	60,322
1912....	45,125	7,566	52,718
Increase.	2,807	4,797	7,604
Decrease	—	—	—

For forty-seven weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1913....	2,223,139	480,697	2,703,836
1912....	2,064,438	376,331	2,440,769
Increase.	158,701	104,366	263,067
Decrease	—	—	—

Week ended December 6.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	50,911	11,666	62,577
1912....	43,153	10,567	53,720
Increase.	7,758	1,099	8,857
Decrease	—	—	—

For forty-eight weeks.

Year.	Passengers.	Goods and Sundries	Total
1913....	2,274,050	492,363	2,766,413
1912....	2,107,591	386,898	2,494,489
Increase.	166,459	105,465	271,024
Decrease	—	—	—

The Hailan Railway.—The work on the Hailan Railway will soon begin in earnest. Director Sze has appointed Messrs. Chang Tah and Wang Chieh-yuan to be Vice-Chiefs of the Eastern and Western Divisions, respectively.

Kiangsu Railway.—At a meeting of the shareholders of the Kiangsu Railway, held at Shanghai, it was decided that the railway should be transferred under State management and that the capital of the shareholders should be repaid by the Government in five years.

The Tientsin-Pukow Line.—Through booking of tickets between the principal stations on the Shantung Railway and the Tientsin-Pukow Railway was commenced from December 15 last.

American Section of Hukuang Line.—It is hoped that the survey of the route to be followed by the American section of the Hankow-Szechuan railway will be concluded before July next. Mr. Randolph, who has been in charge of the edgineering work since the departure of Mr. Beckwith, has made a reconnaissance of a route different from that surveyed for the Szechuan Railway Company. The Chinese line was about 100 miles in length, as against 60 to 65 proposed by Mr. Randolph. From Nau-to-chi to Kweichow in Hupeh, the distance is about 40 miles, and the line should be properly surveyed by January. There will probably be about 12,000 feet to 15,000 feet of tunnels with numerous small bridges, but the section will not be so difficult as that lying between Ichang and Nau-to-chi. In this section there will be about 22,000 feet of tunnels and about 300 feet of bridges.

JAPAN

Nagareyama Railway Co.—All the shares in this company have been taken up. The company proposes to build a light railway, 5·50 miles in length, connecting Umahashi station on the coast line of the Government railways and the Tone Canal *via* Kogane, and Nagareyama, important industrial towns in Chiba prefecture, with a capital of 100,000 *yen*. It is expected the whole line will be completed by April next year.

Tokyo Central Station.—The Central Station, now nearing its completion, will be the largest, as well as the most magnificent, in the Orient. The work was begun about six years ago, and the Station will be finished and ready for actual service in July 1914. The estimated cost of the whole building is 2,500,000 *yen*. In its elaborate architectual plan and modern equipment for the comfort, safety and convenience of passengers, the Station challenges any other building of similar size in the world to-day.

The whole building is of steel frame and reinforced concrete, brick facing, fire proof, and three stories high, The Station proper is 184 *ken* in length and from 11 *ken* to 22 *ken* in width, and covers an area of 2,341 *tsubo*.

The ground floor is entirely used for passenger traffic; there are ticket offices, waiting rooms for 1st, 2nd and 3rd class passengers, a special waiting room for women, a dining hall, and baggage rooms. In the adjoining building in the rear, toilet rooms, lavatories, a public telephone booth, telegraph office and news stand will be provided; one broad passage is made exclusively for out-going passengers.

The special entrance is provided for the use of the Imperial household. The sitting room, waiting room, reception room and auxiliary rooms will be decorated with the finest work of art; at present, brilliant marble walls are receiving the finishing touch. Wagons and other vehicles with baggage can reach the train directly through a part of the building. The basement is divided into two sections; one used for the boiler rooms from where steamheat will warm the entire building in winter; the other is for kitchens. Except three large dining rooms and several adjoining rooms at the south wing on the 2nd floor, the rest of the 2nd and 3rd floors will be used for railway business offices.

The building is furnished with electric light; has three elevators and 11 hydrants around the building. The spacious ground facing the front of Station will be turned into beautiful squares.

Railway Extension Funds.—With reference to the Railway Budget estimates for the coming fiscal year, Mr. Morimoto, Chief of the Accounts Bureau in the Imperial Railway Board, states that the total railway Budget estimates aggregate somewhere near 122,000,000 *yen*. Of this 61,400,000 *yen* is for business expenditure, 1,000,000 *yen* for subsidies to the light railway construction, 500,000 *yen* for special reserve, and 4,000,000 for payment of advances from the Deposits Bureau. It is true that the Railway Board has repeatedly conferred with the Finance Department authorities with a view to obtaining advances, but nothing definite is yet decided. Accordingly the amount of the advance is still unsettled, although it appears that an agreement will be concluded for a loan of some 37,500,000 *yen*. The authorities are rather doubtful as to the advisability of laying a railway extension scheme spread over a period of seven years as advocated in some sections by the public. The Railway Board, however, is desirous to obtain at least 42,000,000 *yen* required for railway extension and improvement.

New Light Railways.—The Railway Board has given a charter to the Shimotsui Light Railway Company for the construction of a line, 4 miles in length, connecting Chaya with Kurashiki, Tsukubogun, Okayama prefecture.

A charter has also been granted to the Moji Chikko Railway Company promoted by Mr. Kawano Naotaro and others for the construction of a steam light railway, 11 miles and 20 chains in length connecting Tanoura, Moji, with Sone village, Kikugun, Fukuoka prefecture, with a capital of 630,000 *yen*.

A charter has been given to the Kominato Railway Company for the construction of a light railway, 31 miles and 50 chains in length, connecting Goi, Ichihara-gun, with Mina village, Awa-gun, Chiba prefecture.

The Kibitsu Light Railway Company has also obtained a charter for laying a light railway, 2 miles and 40 chains in length, between Magane village and Niwase in Kibigun, Okayama prefecture.

The Makio Railway Company promoted by Mr. Nagao Uhachi and several others with a capital of 500,000 *yen* has obtained a charter for the construction of a light railway, 11 miles and 48 chains in length, connecting Hamadera and Yokoyama village in Synhoku-gun, Osakafu.

MANCHURIA

South Manchuria Railway.—The traffic earnings for the month of November amounted to Y2,199,093, being an increase by Y280,973 over the corresponding month of last year. The aggregate earnings for the eight months since last April reached Y13,278,700, being an increase by Y3,065,200 on the corresponding period of last year. During November the freight receipts of the Railway alone amounted to Y1,633,953

The *Manchuria Daily News* is informed that the S. M. R. Co.'s estimates for the next fiscal year include about Y13,400,000 for capital expenditure, about Y42,000,000 for receipts, and about Y37,000,000 for expenditure, leaving for the net profit the balance of about Y5,000,000. Compared with the estimates for the current fiscal year, a decrease of about Y700,000 is observed in the capital expenditure and an increase of about Y4,000,000 in each of the receipts and expenditure. Details of the estimates are given elsewhere.

The same paper says:—Opinions vary on the question of raising the rate of dividend of the S. M. R. Co. by 1 or 2 per cent. per annum. Those who are against raising the rate say that the Company's net profit is only Y5,000,000 per annum at present. The old shares of Y20,000,000, of which Y16,000,000 has already been called up, added to the new shares of Y40,000,000 recently subscribed to, of which only the first instalment of 10 per cent. has been called, make the private capital invested in the Company Y60,000,000, apart from the Government shares of Y100,000,000, which is the appraised value of the old narrow gauge railways, buildings, the Railway Area, etc., as handed over to the Company on March 31st, 1907. When all the aggregate capital of Y160,000,000 is to receive the dividend at the present rate, the total amount required therefor will reach Y9,600,000, which is nearly double the present net profit.

Supingkai-Taonanfu Railway.—The report that the construction of the Supingkai-Taonanfu Railway will probably be commenced on the return of spring has spread along the country through which the railway in project is supposed to pass. The more enterprising Chinese are buying lands which they think will be selected as the sites of railway stations. In consequence, the price of lands along the proposed railway route has risen, and with it the house-rents have also been raised. The surveys for the line are to be completed during this winter, and the construction work will be started on the return of spring. Mr. Sun Pao-chien, ex-Director of the defunct Board of Foreign Intercourse, is mentioned as candidate for the Directorship of the new Railway.

Kirin-Changchun Railway.—A new station was opened at Kutien between Huapichang and Chiuchan on the Kirin-Changchun Railway on December 10. The country about the new station is a fertile bean zone, and the producers there felt great inconvenience because of the lack of railway facility, both Huapichang and Chiuchan being situate a good distance away.

Penchihu-Niuhsintai Light Line.—The project of laying a light-rail line between Penchihu and Niuhsintai passed the Provincial Assembly and the franchise was granted to Chairman Chin of the Penchihu Prefectural Assembly. Work was commenced about two months and a half ago. The promoters had some difficulties with inhabitants regarding the purchase of lands for right of way, but these difficulties were soon amicably terminated. The line is expected to be completed about January 20.

The line starts on the left bank of the River Taitzu near the Railway Bridge at the east of Penchihu, and is fourteen miles long. The estimated cost is about Y180,000. The promoters have in plan the ultimate extension of the line to Chienchang, but this scheme is encumbered with sundry obstacles, and its accomplishment is accepted as a difficult task. At all events the completion of this line will quicken the operation of the colliery at Niuhsintai and at the same time boom Penchihu.

MALAYA

Penang Hill Railway—The Railway commences at a point about 800 yards from the junction of Ayer Etam and Government Hill Roads and ends on the South side of the spur on which "Strawberry" bungalow now stands. The two end stations are at levels of 115 feet and 2,387 feet, respectively, above mean sea level, giving a total lift of 2,272 feet in a distance of 1 mile 433 yards and a mean gradient of 1 in 2·7

It will be constructed in two independent sections, and all traffic will be transferred at an intermediate station, at an elevation of about 1,150 feet. The division into two sections has been necessary owing to the peculiar configuration of the hill, and the desire of obtaining a line economical to work combined with moderate capital cost.

Two carriages will be used on each section attached to either end of a steel wire cable. They will leave and arrive at the stations simultaneously and pass each other at the middle of the section. Each carriage will hold about forty passengers, and when working to its full capacity the line will be capable of dealing with over 3,000 passengers daily. Provision will be made for the conveyance of heavy building materials. The winding machinery will be driven by electricity supplied from the Municipal Electrical Power Station.

The line should be open for traffic towards the end of 1915.

THE PHILIPPINES

Manila E. R. and L. Co.—The Manila Electric Railroad and Light Co. are increasing the capacity of their Manila station by the addition of a 2,500 K.W. Allis-Chalmbes turbo-generator, bringing up the total output of the plant to 9,250 K.W. 2-phase at a pressure of 3,600 volts. The additional steam power required is being met by the erection of a further battery of two Babcock and Wilcox water tube steam boilers each of 400 H.P. (@ 34½ lbs. evaporation) at a pressure of 180/200 lbs. to the square inch, superheated by 100/120 deg. Fahr. The condensing plant for the set is of the Alberger Surface condensing type of 7,000 sq. feet cooling surface, with steam driven air and circulating pumps. A turbine driven hotwell pump is also being installed.

A Westinghouse motor generator set for the railway power is also being added. This set is of 1,000 K.W., the motor end being connected to a synchronous generator of 600 volts d.c.

The work of erecting these additions under the direction of B. H. Blaisdell, chief engineer, is now proceeding and it was hoped to have the motor generator set running when the increased demand for power was made during the Christmas holidays and the turbo set in time for the Manila Carnival and Philippine Exhibition, which will both be held in early February.

Manila Railroad Company.—The *Manila Daily Bulletin* reports that this company is determined to proceed with the line ending at Baguio, in spite of the assertion that the Aringay-Baguio extension was to be abandoned. Our contemporary proceeds:—Already eighty per cent. of the grading from Aringay to Baguio has been accomplished. Nine kilometers of railroad are laid out of Aringay and the construction will continue. The completion of the line to Baguio, it is estimated, will be in 1915.

Although the abandonment of Baguio as a government summer capital will be a temporary setback, the officials believe that with an increasing knowledge of the mountain city nothing can permanently prevent its growth.

GENERAL

Western Amur Railway.—The *Dalakaya Okraina* report:—Traffic has been opened on a part of the Western Amur Railway, and regular goods and passenger trains have been running between the station, Kuenga of the Transbaikal Railway and Kerak of the Western Amur Railway, which is a distance of 779 versts, since the 15th/28th October. The railway will be extended to Blagovyechtchensk, which means an additional 580 versts, so that the distance will be in all 1,359 versts. In January it is expected to run trains between Tchita and Blagovyechtchensk in three days.

TRAMWAYS

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of November, 1913, and for eleven months ended November 30, 1913, with figures for corresponding periods last year:—

	Nov. 1913. $	Nov. 1912. $
Effective receipts	79,266.42	68,893.58
Passengers carried	4,147,254	3,512.793
Car miles run	246,413	226,387
Loss by depreciation of subsidiary coinage	21,663.88	19,330.82
Percentage of loss by depreciation of subsidiary coinage	22.66	23.29

	11 months ended Nov. 30, 1913 $	11 months ended Nov. 30, 1912. $
Effective receipts	842,339.66	730,929.98
Passengers carried	43,566,754	37,385,171
Car miles run	2,632,640	2,521,922
Loss by depreciation of subsidiary coinage	236,414.57	221,271.43
Percentage of loss by depreciation of subsidiary coinage	23.14	24.72

Week ended November 19, 1913.

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,888,77	16,174.51
Passengers carried	983,811	823,813
Car miles run	57,425	53.544

The loss by depreciation of subsidiary coinage for the week was $5,089.20, equal to 22.38 per cent. of the gross cash collected on the cars as compared with $4,537.11, equal to 23.29 per cent. for the corresponding week last year.

Week ended November 26.

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,188,30	16,070.65
Passengers carried	950,600	817,549
Car miles run	57,701	53,565

The loss by depreciation of subsidiary coinage for the week was $4,972.39, equal to 22.69 per cent. of the gross cash collected on the cars as compared with $4,440.24, equal to 23.04 per cent. for the corresponding week last year.

Week ended December 3.

	1913. $	1912. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	17,523.66	15,814.64
Passengers carried	921,408	803,197
Car miles run	56,050	52,904

INTERNATIONAL INTRIGUES IN CHINESE RAILWAYS

AN ANALYSIS OF BELGIAN AND FRENCH RAILWAY ACTIVITIES IN CHINA, DISCLOSING THE TRIUMPH OF RUSSIAN DIPLOMACY, THE SIDE-TRACKING OF BRITISH DIPLOMACY, THE LOSS OF CHINA'S FREEDOM OF ACTION, AND THE MENACE WHICH OVERHANGS HER

Under the title of the "Growth of Belgian Interests in China," the FAR EASTERN REVIEW, in its issue of August, 1913, drew attention to the fact that the signing of the agreement for the construction of a railway longitudinally through Shansi, with an extension to Chengtu, the capital of Szechuan province, coupled with the previously signed agreement for a railway from Lanchow to the sea, brought "forcibly to notice *the most important development in international enterprize which has taken place in China in recent times.*" That development was the surprising growth of Belgian interests, combined with the possibility of the co-operation therein of Russian finance or diplomacy, or both. We briefly alluded to the significant connection of Russia with the early participation of Belgian financiers in Chinese railway loans, and after citing instances, concluded the article with the suggestion that "The one thing that is certain is that the loan will not be purely Belgian, and the interesting point to China is: How far does Russia financially or politically participate?"

It interests us peculiarly to see that the importance of this unique advance on the part of Belgium escaped the notice of other publicists until January of this year. The Peking correspondents of *The Times* and the *Daily Telegraph* of London were then prompted to a realisation of it by the statement that the Belgians proposed to establish the seaport of the midland trunk line from Lanchow, (in Kansu Province) at the port of Haimenting, on the north bank of the Yangtsze River, some fifty or sixty miles from Shanghai, instead of at Haichow, as originally suggested—a possibility which was emphasised in the April, 1913, issue of the FAR EASTERN REVIEW.

The correspondent of *The Times* discovered the possibilities of a portentous design on the part of Russia as a result of realisation that British preserves in the Yangtsze bade fair to be trespassed upon, and since his telegram further opens up one of the largest questions which has yet entered the polemical sphere connected with international railway activity in China we reproduce it with the object of using it as the peg upon which to hang argument which it is competent to use to demonstrate the union of purpose and interests which deduction can prove to exist between Belgium, France and Russia in their railway policies in China. *The Times* correspondent says:—

"The belief is current that the Chinese are about to consent to an important alteration in the alignment of the Belgian trunk railway between Lanchowfu and Haichow. Haichow proving on examination unsuitable as a port the Chinese are being pressed to agree to allow the railway, after crossing the Tientsin-Pukow line near the Shantung border, to run southward along Kiangsu province to Haimenting, on the northern bank of the Yangtsze, a small port within fifty miles of Shanghai.

"The change involves the construction of a line parallel to the British section of the Tientsin-Pukow railway, calculated to affect the traffic of the latter. This aspect of the question, however, is of minor importance compared with the prospect of the establishment of the terminus of what must eventually be the longest railway in China at a new port actually on the Yangtsze within a stone's throw of the greatest emporium for British trade in the Far East. So definite a challenge of the British position in the Yangtsze, following on the recent intrusion of French enterprize at Pukow, provokes lively comment here.

"If the Lanchowfu-Haichow railway were a purely Belgian concern less importance might be attached to the present move. But it is well-known that Belgian enterprize in China is largely financed by the French while in some quarters it is believed to be supported politically and financially by Russia. The Lanchowfu-Haichow railway realises a part of a long cherished Russian scheme to build a railway from Russian Turkestan, through Chinese Turkestan, to Lanchowfu and thence into the heart of China. Should such a line ever be built it will be purely Russian at its western extremity and by reason of Russia's relations with France is liable to become subject throughout to the control of Russia.

"The French are now demanding from the Chinese the sole right to construct a line from Yunnanfu to Chengtu. Significance attaches to this scheme because it involves the linking up of the French Yunnan railway with the other great Belgian project from Chengtu to Tatungfu for which the concession was lately obtained. This Belgian scheme is really mainly French, and suspected to be partly Russian, and will inevitably connect hereafter with a Russian trans-Mongolian railway in the north, thereby creating another tremendous steel road based in Russian territory and potentially Russian throughout its length.

"The somewhat fantastic view that Russia under cover of French and Belgian railway enterprise is preparing to swallow the whole of China does not affect the fact that such enterprise is encroaching on British preserves in the Yangtsze and endeavoring to acquire exclusive rights in Yunnan and Szechuan despite an Anglo-French agreement to share equally in these regions."

The Peking correspondent of the London *Daily Telegraph* (Mr. Putnam Weale) also telegraphically drew attention to the subject in his usual vigorous style, and in the course of a despatch said:—

"In continuation of my yesterday's telegram regarding Russia's protest against China opening to international trade and residence five cities in Inner Mongolia, the semi-official press to-day makes the significant announcement that the Sino-French Industrial Bank has finally accepted as security for its £6,000,000 loan, the signature of which was long ago reported, the Peking city octroi receipts. The bonds will consequently be offered for subscription in Paris and London at the end of February. The bank is paying money to the Chinese Government in half million sterling monthly instalments.

"This means another nail in the coffin enclosing Britain's lost prestige in China. Not only has the policy of Sir Edward Grey in attempting to keep up an impossible monopoly disgusted all British enterprise and made English representatives report home the uselessness of their activities, but, in addition, under cover of an embargo on British enterprizes, Franco-Belgian agents have secured the richest prizes. By far the most important is the double trunk railway which the Belgian agents, acting for a Franco-Belgo-Russian combination, secured last summer, and which is now being actively built from the extreme north-western part of China to the Yangtsze estuary, reaching the sea, not at Haichow, as originally scheduled for the purpose of bluffing, but at Haimenting, an anchorage on the north bank of the Yangtsze, 70 miles from Shanghai, which has already been surveyed.

"This is the point at which Russia will ultimately debouch upon the Yellow Sea unless some Power other than England intervenes.

"From Tatung, in Shansi, the present limit of the eastern branch of the Belgian trunk line to autonomous Mongolia is only a few hundred miles, and the entire strength of Russian diplomacy is therefore concentrated on winning from China a demarcation of the independent Mongolian boundary as far south as possible, making the construction of the remaining railway links thereby easier.

"The fact that the French Industrial Bank has virtually acquired the port of Pukow and the right of betterment of Wuchang and Hankow with the proceeds of the present loan shows how much has already been done, whilst the recent demand of the French Minister for a railway concession uniting Yunnanfu and Chengtu forms one of the last links necessary to make complete the chain of a Franco-Belgo-Russian system, enveloping the whole of China and issuing on the sea. . . .

"Since the first shots of the Chinese revolution were fired at Wuchang two and a half years ago British policy may best be described as a series of unmitigated mistakes, principally due to championing the cause of a financial combination which has no right to exclusive support, coupled with the steady discouraging of all who could have saved the situation.

"When one looks back and sees how much has already been deliberately lost and how unpromising is the future, the feeling deepens that some reckoning should be called for by Parliament and that something should be promptly done."

The Times correspondent, unlike his literary confrère, does not express with conviction the view that Russia is the master hand behind the development of Belgian or Franco-Belgian interests in China, though he shows clearly enough that the acquisition of rights by Belgium and France to construct through railway lines which cut China virtually north and south, and east and west stands politically to benefit Russia considerably and to work to the ultimate detriment of Britain. The correspondent of the *Telegraph* is more emphatic. Above all he awakens his people to a sudden realisation of the fact that Russian and French diplomacy has signally triumphed, while that of Great

Britain has been anything but successful, and paves the way for the critical investigator to examine, analyse and assemble evidence to show that there may not be so much fantasy as the *Times* correspondent puts it, in the proposition that Russia is a semi-somnolent partner in the extraordinary railway schemes of Belgium and France as the *Times* correspondent is charitably inclined to suppose.

For the purpose of throwing enlightenment upon a very important question, therefore, we propose to augment the evidence mentioned in the above-quoted telegram, doing so, of course, without prejudice, and in an academic manner.

RUSSIA'S AIMS IN THE FAR EAST.

It is generally conceded that the great aim of Russia in the Far East has long been, and is, to obtain an ice free port as an outlet for her immense territories in Siberia and Central Asia. Checked in her designs to find a way through Persia to the Persian Gulf, and forced back in her advance on India, she was compelled to seek the outlet at the eastern end of her great empire at Vladivostock. The history of the Siberian railway, and the concession for the Chinese Eastern line through Manchuria is common history, as is also the sequel which gave to Russia the railway from Harbin to Port Arthur and the lease of the Liaotung Peninsula.

The war with Japan, which wrested from Russia the fruits of her diplomatic victory, and compelled her to relinquish the Liaotung Peninsula and the South Manchuria Railway to Japan, and which deprived her of the use of the Chinese Eastern Railway for strategic purposes, compelled her to seek other means to regain her lost position.

Hardly had the ink dried upon the Portsmouth Treaty, than the Russian Government authorized the double-tracking of the Siberian railway and granted the appropriation for the construction of the Amur lines. These works have been actively pushed ahead in the last four years, and the Amur line is nearing completion, while the double tracking of the Siberian railway is about seventy-five per cent. completed. Many other new lines* are projected for the exploitation of Central Asia, some of which have received the sanction of the Government. Vladivostock has been made practically impregnable, but as it lies exposed to Japan it may be wrested from her in another war. As a commercial port, however, it has great disadvantages, for it is open for only half the year and can never serve as an adequate outlet for the great Siberian country and its rapidly expanding trade and industries. Confronted by Japan in South Manchuria, Russia cannot hope to secure a seaport in that direction except through another costly and disastrous war.

In all books dealing with Russian policy in Asia the fact is emphasized that one of her great dreams is an approach to Peking across Mongolia via Kalgan. In the negotiations caused by the signing of the Chinchow-Aigun railway loan agreement, Russia agreed to withdraw her objections to the construction of that line, and suggested that a railway from Kiachkta to Kalgan be built instead. The project for a railway from Kokand (Kojend), the terminus of the Central Asian line, through Kashgar, Hami, Suchow to Lanchow-fu, in China, has always been set aside for Russia to finance and construct, and is looked upon as one of her unquestionable rights.

RUSSIA AND THE PUKOW-HANKOW CONCESSION.

In 1898, during the "Battle of Concessions" for railways in China, the great desire manifested by Russia was to secure control of a railway from the north which would join with a line from Indo-China, and so establish a through trunk route bisecting China, and under control of the Dual Alliance. Only the constant vigilance and prompt measures of the British Government frustrated those designs at that time. The tension was so great that the British and Russian Governments were constrained to enter into an understanding, †which precluded the Russians from seeking railway concessions trespassing upon the Yangtsze valley and Britain from seeking concessions to the north of the Wall.

With this agreement still in force, Russia may not openly take active steps to secure advantages in Central or South China, and can only accomplish her ends through the medium of a third party. This, Russia has apparently done by entrusting her interests to others. She has retired into the background, and confided the active work of advancing her political interests to her political ally and her financial agent.

When the Belgians entered into the field for railway concessions in competition with the great Powers, the suspicions of the Chinese seem to have been lulled by the innocent arguments that Belgium was only a small country with no army or navy, and whose only interest was to find an outlet for her manufacturers of iron and steel products. The Chinese fully believed these statements, even when the real truth was pointed out to them, and despite all warnings sustained their confidence in the honeyed words of the Belgian promoters.

The British Government, however, appears to have entertained no illusions at that time as to the real character of the Belgian syndicates seeking concessions in China, and clearly saw the hand of Russia in the negotiations for the Peking-Hankow line—a railway which would admit Russia into the Yangtsze valley without ostentation. As a matter of fact the most powerful supporter of the Belgian syndicate was the then Russian Chargé d'Affaires (M. Pavloff) in Peking, and the French Minister. The then British Minister at Peking, Sir Claude MacDonald, protested vigorously to the Tsungli Yamen (Office of Foreign Affairs) against conceding the Peking-Hankow line to Belgium because of Russia's participation in the syndicate; and the Tsungli Yamen in reply, assured the British Minister that the Russian Bank was not interested in the scheme, and that no agreement admitting the Russo-Chinese Bank to participation would ever receive the Imperial sanction.

Three days after the Chinese Government gave this assurance the Peking-Hankow Railway Agreement was signed with an ostensible Belgian Syndicate. In Article 18 it was stipulated that the Russo-Chinese Bank would be the Agent for the Bonds, and Article 20 provided that the Russo-Chinese Bank should be the Bank of deposit and the medium for monthly payments.

Here, then, was absolute proof that the Belgian negotiators had either got on the blind side of the Chinese, or that the latter, knowing the facts, had wilfully deceived the British Government.

This breach of faith and slight to Great Britian was costly to China. The British Government immediately demanded compensation for the affront, and insisted upon China granting the concessions for the Shanghai-Hangchow-Ningpo, Shanghai-Nanking, Canton-Kowloon, and Pukow-Sinyang Railways as the penalty for giving the rights to build the Peking-Hankow line to the Belgians with Russian participation.

So here, at the very outset of the struggle for railway concessions in China, Russia employed her Belgian Agent with success to pull the wool over the eyes of the Chinese Government, to bring discredit upon its high officials, and cause her to lose face with Great Britain.

The Peking-Hankow Loan Agreement is usually accepted as a Belgian enterprise by the Chinese and others unacquainted with the true facts, but the French Yellow Book (the official publication of the French Foreign Office) in its issue of June, 1900—where it explicitly enumerates the various railway and mining concessions held by French Companies in China—specifically says that the Peking-Hankow concession is Franco-Belgian, and that the line is built and operated for the mutual profit and equal advantage of the French and Belgian parties. The French participation, according to this official French Government report, is 60 per cent. and the Belgian 40 per cent. So here again is absolute proof from the highest possible source that the so-called Belgian loan and concession was in reality 60 per cent., French.

When it is kept in mind that the Russo-Chinese Bank was the official financial institution of the loan in China, and the Russian Chargé d'Affaires in Peking was the strongest supporter of the syndicate in forcing the loan through, it becomes apparent

*These new projects were fully described in the September, 1912, issue of the FAR EASTERN REVIEW.

†Under date of April 28, 1899. Sir Charles Scott and Count Mouravieff, Russian Minister for Foreign Affairs, exchanged notes wherein Great Britain engaged herself not to seek any railway concessions to the north of the Great Wall, while Russia undertook not to seek railway concessions in the basin of the Yangtsze. Both undertook not to obstruct each other in their respective spheres.

that the Russians also had a fair participation in the syndicate. At all events it is clearly emphasized that the Belgians had acted as the agents of France and Russia in securing the concession, and lulling the suspicions of Great Britain and the Chinese to the true character of the syndicate. It is clear, in view of the facts made public in this case, that the Russian interest in the Peking-Hankow line is deeper than appears on the surface, and that China willingly or unwillingly played into the hands of the Belgians, and had to pay the price for the deception to the British Minister.

SIDELIGHTS FROM OFFICIAL RECORDS

Some interesting sidelights are thrown on the exact status of the Société d'Etudes de Chemins de Fer en Chine, by reference to various official publications of the British and French Governments.

The British Blue Book for 1900, on page 61, reproduces a communication from Sir Charles Scott to the Marquis of Salisbury, dated St. Petersburgh, March 23, 1899, which reads as follows:—

"My Lord,—The Belgian Minister referring yesterday to the recent publication of Parliamentary Papers on Affairs in China, said to me that he understood they contained an interesting account of our opposition to the Belgian concession for the Peking-Hankow Railway, which from what he was told of the correspondence, was based on an entirely mistaken conception of the part which the Russian Government and Russo-Chinese Bank had taken in connection with this concession.

"As he had had to deal with all the communications on the question, he was anxious to give me the most solemn assurance, which the Director of the Russian Bank would be able to confirm, that not a single Rouble of Russian money was invested in that concession, and that the Russo-Chinese Bank had no share or interest in it whatever, except having undertaken to act as Bankers for the Belgian Syndicate. It was a purely Belgian undertaking with the object of developing Belgian industry, and the Russian Government had consented to give the Belgian Government its support in obtaining the concession, for the simple reason that a small country like Belgium could have no possible political object in view, and the Russian Government has said that they could on that account more readily support it than if the undertaking had been German, British or FRENCH."

The British Foreign Office was, however, apparently not entirely satisfied with these assurances, and in the meantime, the prospectus of the Loan was published in Brussels, a copy of which was forwarded to London by the British Minister at Brussels, Sir F. Plunkett.

The prospectus disclosed that the Board of the Société Belge pour l'Etude de Chemins de Fer en Chine was composed half of Belgians and half of Frenchmen, and the two countries would supply each half the employees for the construction of the line, and share the orders in connection with it equally, while of the money lent, 60 per cent. was supplied by the French and 40 per cent. by the Belgians.

Sir F. Plunkett in a communication to Lord Salisbury, dated Brussels, May 6th, 1899, furthermore said:

"My Lord,—The language held by the Belgian Minister at St. Petersburg, reported in Sir Charles Scott's dispatch of the 23rd of March, relating to the Belgian concession for the Peking-Hankow railway (forwarded to me by your Lordship) is identical with that generally held to me here.

"Whenever questioned, the Belgian Government authorities all unite in repeating that the money and interests engaged in that concession are mainly bona fide Belgian, and that the reason why the promoters of this concern had employed the Russo-Chinese Bank was solely because that institution met them in a more friendly spirit than did the English local Banks and commercial magnates, who (they say) sought to exclude the Belgians from participation in the distribution of Chinese Concessions."

It is thus seen that the Belgian authorities all united to uphold the "bona fide Belgian" character of the Syndicate, and justify the connection with the official Russian Bank. The French Government, however, had nothing to conceal, and in the French Yellow Book (Chine, Juin-Octobre 1900, pp. 23-27) gives the official French version of the status of the Syndicate as follows: "The Société d'Etudes de Chemins de Fer en Chine," a Franco-Belgian syndicate in which the French element is represented by the big financial establishments of Paris and the big metallurgical industries of France, has received a concession of a railway from Peking to Hankow. The two contracts relating to this line, for a loan and for operating, are dated the 26th of June, 1898. The line will have an extension of about 1,250 kilometers. It is being built and will be operated by the Société d'Etudes for the mutual profit and equal advantage of the French and Belgian parties.

"The loan to be floated is 112,500,000 francs. It has been agreed that the French financial share shall be three-fifths, that of Belgium two-fifths. A first issue of 133,000 bonds of 500 francs 5 per cent. was made at Paris and Brussels on April 19, 1899. 220,800 bonds were subscribed for, 190,800 at Paris and 36,000 at Brussels. The product of this first issue will suffice to build 500 kilometers, of which 300 are in the north and 200 in the south, and which will be soon finished. 150 kilometers in the north are already being operated. The building of the remainder will be seen to by a second issue as soon as circumstances permit of it."

It will be noted that although it was arranged that the Belgians should take 40 per cent. of the loan, the French Government officially declares that the proportion of the first instalment of the loan was only taken up as to about 15 per cent. in Brussels, the Paris bankers taking up the balance, or 85 per cent.

After reading Sir Charles Scott's letter to Lord Salisbury the question naturally arises: Why was the Russian Government so willing to support a concession for Belgium rather than openly support what it must have known to be a proposition of its political ally? The facts disclosed are irrefutable, and the question again arises, if the Syndicate was actually French, why did it select the Russo-Chinese Bank as its agent in China when the business could have been done through the official French institution (the Banque de l'Indo-Chine)? Did the Russian Government support the syndicate merely for the petty banking profits for the Russo-Chinese Bank on the handling of the funds in China?

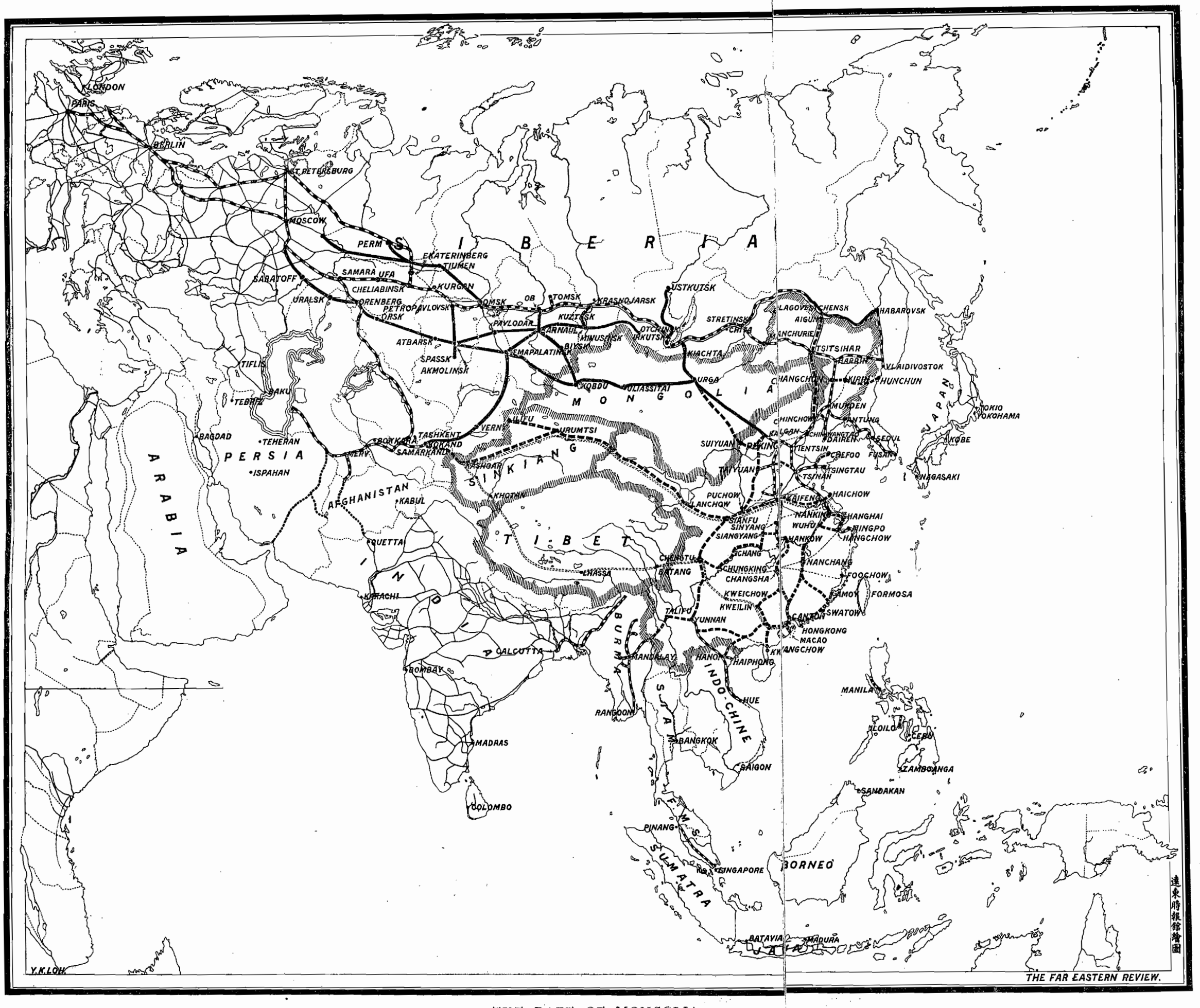
With the above official facts clearly established, and the further fact that the Société Belge pour l'Etude de Chemins de Fer en Chine, is now an integral part of the Official Russian Group, it would appear that the anxiety of the British Government concerning the actual status of the Syndicate had some real foundation.

THE CANTON-HANKOW RAILWAY INTRIGUE

With the control of the Peking-Hankow line securely in the hands of the Franco-Russo-Belgian combination, giving them a line from Peking to the Yangtsze, the allies, intent on their original scheme for a through trunk line dividing China and connecting Russia on the north with her ally in Indo-China, set about to undermine the position of the Americans who at that time held the concession for the line from Canton to Hankow. They had tried hard to secure this concession in competition with the Americans, but had failed, so they then planned to secure control of the American-China Development Company by the open purchase of the shares of the company on the New York stock market. The history of this intrigue and its success is familiar to all interested in Chinese railway history. The Belgian agents quietly purchased the shares on the open market from the unsuspecting American shareholders, and when they had secured control of the stock, they assumed the direction of the company and the work in China. The American engineers were discharged and supplanted by Belgians, and the latter undertook the work of construction of the line.

The Chinese became alarmed as they awoke to the fact that the Belgians had become masters of a dangerous situation, and that the control of the through trunk line from Peking to Canton was liable to fall into the hands of the Russians and their French allies. The Chinese, urged by interested parties, demanded the cancellation of the American concession, and although the firm of J. P. Morgan & Company repurchased the shares to regain the control in the hands of Americans, the Chinese insisted on the cancellation as a penalty for the breach of faith, and America, deferring to the professed desires of the Chinese to construct the line with their own funds, finally assented to hand the concession back to China, in return for $6,500,000, which sum the Chinese borrowed from the Hongkong Government and thus virtually handed over to British interests the rights surrendered by the Americans.

China, at that time made America pay the price for the breach of faith, an error which was not committed with intention, as the shares were bought up on the market privately. But leaving out of the question the feelings of the Americans who had



THE RAPE OF MONGOLIA (reprinted from F.E.R of Sept. 1912)

MAP ILLUSTRATING RUSSIA'S ASIATIC RAILWAY PROGRAM

Lines in Operation are shown ▬▬▬; Russia's Projected Lines ▬▬▬; China's Projected Lines - - - - - - - - -; That part of the Trans-Siberian Railway between Omsk and Chita, to be doubled tracked by the end of this year is shown ▬▬▬; The Chinchow-Aigun Railway projected by China, and prohibited by Russia is shown ▬▬▬. Although Russia emphatically refused to acknowledge China's right to construct railways within the confines of her own territory on the grounds that they were a menace to Russia's strategic position on the Amur, the Map clearly shows that Russia has paralelled China's Mongolian border on the North and East, and with the completion of the proposed lines will completely encircle Mongolia and Sinkiang. In the above map the Trans-Mongolian Railways (Kalgan-Urga-Kiahkta and the line to Uliassutai and Kobdo) are indicated as Russian projects in accordance with the Russian official program.

been duped by the Belgians and pushed out with the aid of the British, the main object of the latter was achieved, and the Belgians and their Russian partners were blocked in their scheme to secure control of the through trunk line.

China was saved, and the British position was secured in the South Yangtsze region, but the Americans have never forgotten or forgiven the intrigues which made them lose face with China, and which held them up to the ridicule of the financial world. Those on the inside knew that in due time the situation would be repeated, and they have patiently waited to see what attitude China and the other interested parties would assume when the shoe became transferred to the other foot.

Having now clearly demonstrated the designs of the Franco-Russo-Belgian combination which were frustrated in this great scheme we can take up and trace the other ramifications of the general policy of these political and commercial allies. But before pursuing the matter further it may be well to point out that the title of the Franco-Belgian Syndicate who secured the concession for the Peking-Hankow line was the Société d'Etudes de Chemins de Fer en Chine, an organisation which, as will appear later, was in reality the agent for Russian political designs on China.

ACTIVITIES IN WESTERN CHINA

As pointed out in the commencement of this article one of the great dreams of Russia has always been to secure control of the approach to Peking through the Kalgan Pass, and at the time that France secured the concession for the Yunnan line, and subsequently, the French and Russian papers—reflecting the political sentiments of their governments—devoted considerable space to the advisability of securing the concessions for another trunk line through Western China, to connect at Kalgan with the Trans-Mongolian project, to then strike south through Taiyuanfu to Sianfu, and thence to Chengtu and Yunnanfu, where it would link up with the French line to the sea at Haiphong.

Such a line was purely for the advancement of Russia's strategical position in China and Central Asia. It would complete a trunk line bisecting China to the west, away from the coast and the interference of other Powers; would bring the northwest and western provinces within the Russian sphere of influence, and, when the line connecting with Urga was completed, would constitute a through military line for an army of penetration from both North and South. These lines have appeared in many foreign maps and have been designated as Russian projects, and to those who have studied the railway policies of the various Powers in China, no other construction can be placed on the designing of the lines.

It will be remembered that in 1898 the Russo-Chinese Bank secured the concession for the line from Chengtingfu to Taiyuanfu. The question arises, why did Russia seek a concession in the province of Shansi? The answer may perhaps be found in the verbal agreement given by H.E. Sheng Kung-pao (the then Minister of Communications) to the Russo-Chinese Bank, that if the Bank constructed the line to the satisfaction of the Chinese Government, they would be accorded the right to construct the extension from Taiyuanfu to Sianfu. It is well to bear the fact in mind that the right to construct the extension was promised to the Russo-Chinese Bank.

Shortly after the Russians secured the concession for the Taiyuan line, the Belgians succeeded in signing the agreement for a line from Kaifeng to Honanfu, along the Yellow River. Why did the Belgians set such store upon a short, apparently insignificant line that began nowhere and ended nowhere, and had no outlet to the sea except over the rails of the Peking-Hankow line?

Was it simply to act as a feeder for the main line? That was the impression allowed to prevail. The real answer perhaps may be found in the fact that the Agreement gave them the right to construct the extension to Sianfu.

Was there any coincidence in the fact that both these lines had the same destination? It is competent, in the light of later events, to argue that both these innocent agreements for short unimportant lines followed a well defined and deep laid policy for e control of north-west China.

In the French Yellow Book of 1900, the French Government frankly states that although the concession for the Taiyuan line was secured by the Russo-Chinese Bank, the construction and operation of the line had been entrusted to the French Group in the Russo-Chinese Bank. The same Book also officially states that the Compagnie Général de Chemins de Fer et de Tramways en Chine, which had secured the Kaifeng-Honan Concession, was in reality a Franco-Belgian Company, and this indicates the predominance of the French capitalists in the concern. It is a significant fact that after the Taiyuan line was completed, and the Russians had handed over control to the French section of the syndicate, that the petition to the Waiwupu for the privilege of extending the line to Sianfu, as promised by H.E. Sheng, was made by the Belgian Minister at Peking. Here we again have the most convincing evidence of the harmony of interests binding Russia, France, and Belgium.

RUSSIA'S RENEWAL OF ACTIVITIES

At this time, or about four years ago, Russia's prestige had declined in China as a result of the war with Japan, and it was necessary to entrust her interests to her ally and agent until she could resume diplomatic activity in Peking on her own behalf. Russian policy in Asia never changes; it may be checked at times, but Russia quietly awaits her opportunity and at the right moment presses forward and regains her lost ground. Thwarted by Japan and Britain in gaining her ice free port at Dalny, she has had to readjust her position and policy to the changes brought about by the war. Russia must have such a port for the development of her great Asiatic Empire, and, as she has none of her own, she must necessarily take it by force from her neighbor, which, in this case, is China. As she is not yet ready again to try conclusions with Japan and her formidable ally, she has had to attack the problem from the flank and press her borders out at the expense of China, and with the aid of her ally and her agent attempt to gain in China Proper what she has had to relinquish in Manchuria.

The Revolution presented her with the opportunity in Mongolia. The dominance of Mongolia by Russia under the guise of acknowledging the independence of the Mongolians is fresh history. With the loss of her sovereignty over Outer Mongolia, China has to carry on a costly and tedious warfare against the Urga authorities who now claim jurisdiction over all the Mongol tribes, for the final possession of the Inner Strip. Why has Russia forced this issue on China at a time when the Government is struggling to hold the country together and preserve its integrity in the greatest crisis of its history?

The reason is not far to seek. Russia's plans are bearing fruit, and the dissensions and jealousies of the Powers and the Bankers have presented her with an opportunity, which she has profited by, to advance her interests.

THE NOTORIOUS "BELGIAN LOAN"

We must go back to the time of the Revolution and trace briefly the struggles of both sides to secure funds to carry on the war. All the foreign Governments had agreed to maintain neutrality, and through their control of the Quadruple Financial Groups, the four large lending nations had effectively closed the door to any independent loan. Up to this time, Russia and Japan, owing to their being borrowing nations, had not actively entered into the competition to finance China, except in a small way. But the Revolution with its iron bound monopoly of the Quadruple Group opened the way for their activities. Russia's opportunity had arrived.

In November, 1911, there arrived in Peking at a time when the financial deadlock was in force, a new figure in Chinese banking circles, who represented what was claimed to be an independent international syndicate. This gentleman was M. de Vos, who had been promoted from the Belgian Consular service to the head of an exceedingly strong financial group. M. de Vos had been Belgian Consul General at Tientsin and afterwards at Kobe, and when home on a vacation he was selected to head the new "independent" group.

The group was composed of the Russo-Asiatic Bank (previously styled the Russo-Chinese Bank), the Sino-Belgian Bank, Banque d'Outremer, Société Générale de Belgique,

Société Belge d'Etude de Chemins de Fer en Chine, Eastern Bank, Limited, J. Henry Schroeder and Co. and A. Spitzer and Co.

It was a significant fact that although the Russo-Asiatic Bank had its own branch and capable financial agent in Peking, the leadership in the new group, in which the Bank was included, was entrusted to a Belgian Consular official. This naturally gave rise to the impression that M. de Vos was in reality a special agent sent to China to work in harmony with the Bank for railway and other concessions and Government business, which the bank itself was prohibited from undertaking owing to the convention with Great Britain defining the Russian sphere as practically north of the Great Wall. Otherwise why should such a group be organized, with the Russian Bank in the leading role, and its negotiations be entrusted to a Belgian Consular official with no previous training as a financier? The work of M. de Vos since he arrived in Peking has, in the mind of critics, fully confirmed the above surmises.

After successfully negotiating a few minor financial transactions he was ready for the real work he was undoubtedly sent to do. The then Premier was badly in need of funds for administrative purposes, and the only available asset left to offer as security for the tottering Manchu Government was the Kalgan railway. The then Acting Minister of Finance had tried to secure a loan for £1,000,000, on the security of the Kalgan line from America. Although this sum represented the entire cost of the line, American bankers would not listen to such a proposition. But the representations of their agent in Peking convinced them that the line was a valuable one, and that the Chinese would only concede this loan to America for fear of its falling into the hands of Russia if the loan were raised in Europe. The American bankers were willing to advance the funds, but were prohibited from so doing by the command of the American Government, who refused to permit the neutrality agreed upon by the Powers to be broken. The American bankers were consequently compelled to retire, but still endeavored to maintain a footing for this loan. The Americans were specially urged by the Chinese to take up the loan on the grounds that it was an established policy of the Chinese Government never to permit the Kalgan line to fall under the influence of any European Power, for fear that Russia might be interested and so secure the control of the much-coveted approach to Peking. Only to America, it was then declared, would the Chinese consent to mortgage this line, and the Americans interested believed the specious and logical arguments adduced, and were prepared to lend the money as soon as the embargo on independent loans was raised by the Powers.

When Yuan Shih-kai was proclaimed provisional President of the Republic and Tang Shao-yi was appointed Premier, one of their first acts was to enter into an agreement with the Quadruple Group for the immediate financing of the country, giving them an exclusive option on all loans. This agreement was in the shape of a letter* signed on March 10, 1912, but the first act of the new Government after that date was to sign a loan for £1,000,000 with the Belgian Group, headed by M. de Vos, giving the Kalgan line as security. The new Government knew that the Americans stood ready to advance this sum, but they deliberately signed the loan and therewith handed over the Kalgan railway as security, forgetful perhaps of the policy of the previous Government in this regard, and ignorant, no doubt, of the close connection of the Belgians with the Russians.

So once again the Belgians scored, and once again the Chinese had to pay dearly for the breach of faith with the Quadruple Group, and incidentally caused the world to lose confidence in the integrity of their most brilliant diplomatic official. If it had not been for the vigorous protest of the Powers, which compelled this "Belgian" loan to be covered by the Reorganisation loan, the Kalgan line would now be effectively mortgaged to Russia under the flimsy disguise of a Belgian loan.

RUSSIA IN THE SEXTUPLE GROUP

When the time came for the negotiation of the Reorganisation Loan, Russia and Japan demanded and received admission into the official Quadruple Financial Group, which then became known as the Sextuple Group. The new combination arrived at a mutual agreement amongst themselves as to the division of future business in China, and the names of all the Banks constituting the various Groups were then set forth in that document.* The Russian Bank signed the Inter Group Agreement, acting for the following parties, known as the Russian Group. These names should be carefully noted, as they fully corroborate the fact that the Belgians are in reality acting in China on behalf of Russia, and that M. de Vos, in his capacity as the head of a Belgian syndicate, must likewise be regarded as an agent of Russia, although engaged professionally as a Belgian financier. The names of the Russian Group are:

BANQUE RUSSO-ASIATIQUE
A. SPITZER & COMPANY
J. HENRY SCHROEDER & COMPANY
EASTERN BANK, LIMITED
BANQUE SINO-BELGE
SOCIÉTÉ BELGE d'ETUDE DE CHEMINS DE FER EN CHINE
SOCIÉTÉ GÉNÉRALE DE BELGIQUE
BANQUE D'OUTREMER (BELGIAN)

Or, in other words, this is the identical Group for which M. de Vos had been acting up to the time the Russians were admitted into the Sextuple Group. With the above names before us, it is well to stop and analyze the composition of the Group before proceeding further.

The Peking-Hankow Railway Concession was signed by the Belgians in the name of the Société Belge d'Etude de Chemins de Fer en Chine, which, according to the French Government Yellow Book of 1900, was a Franco-Belgian syndicate, in which the Belgian share was only 40 per cent. We have seen that the Russo-Chinese Bank (now Russo-Asiatic Bank) was the official Bank in China for the service of the loan during construction, and we now find the suspicions of 1898 openly confirmed, and the Société Belge d'Etude de Chemins de Fer en Chine, is unblushingly a component part of the official Russian Group at the actual moment. This amply proves the part played in 1898 and discloses the real character of the concern.

The Kaifeng-Honan Railway Concession was signed in 1899 in favor of a so-called Belgian syndicate called the Compagnie Générale de Chemins de Fer et de Tramways en Chine. The French Yellow Book for 1900, however, describes this as a Franco-Belgian syndicate, indicating that the French element predominated, and although the actual proportions of the shares are not given it is fair to assume that it was at least half, if not similar to the other concession in which the Belgian interest was officially only 40 per cent., which included the Russian share.

FROM RUSSIA TO THE SEA.

It is a remarkable and significant coincidence that M. de Vos, quietly working in Peking for the advancement of purely Belgian interests, though at the head of what was afterwards admitted as the official Russian Group, should secure the concession for the extension of the Kaifeng-Honan railway on behalf of the Cie Générale de Chemins de Fer et de Tramways en Chine. The original concession only gave the company the right to the extension westwards from Honan to Sianfu, but we find, in the actual loan agreement,† that he not only succeeded in having this extended to Lanchowfu, but also obtained the right for a futher extension to Suchow-fu, while to the eastwards the line was continued from Kaifeng to the sea at Haichow.

A little reflection and study of the map should convince one that this is an essentially Russian project, and dovetails into the Great Trans-Asian line which has always been set aside for Russia. As the continuation westwards from Suchowfu must necessarily ultimately connect with Russia's Central Asian system, and constitute a through trunk line from Central Asia to the heart of China and the seacoast, it must have met with the hearty support of Russia.

*See "Revolution Number" of the FAR EASTERN REVIEW, April, 1912.

*See FAR EASTERN REVIEW, March, 1913, for full text of the Inter-Group Agreement.

†See full text of Agreement in the January, 1913, issue of the FAR EASTERN REVIEW.

If Russia denied the right of China to construct the Chinchow-Aigun line under American financiers and British contractors, as constituting a menace to her strategical position on the Amur, would she not have prevented the construction of the line to Lanchow and Suchow if the agreement had been made with any country other than her ally or her agent? That is a fair question.

Everything points to the conclusion that this line was secured by M. de Vos in furtherance of Russia's special interests for the penetration of China from Central Asia, and to give to Russia, when the time comes, the right to a port on the coast of China.

The acquirement by alleged purely Belgian interests of the right to build this railway was one of the greatest victories achieved by Russia under the nose of her opponents, and in the future will have a far reaching effect upon the destinies of China and the position of Great Britain in the Yangtsze valley.

Always bearing in mind the desires of Russia for an ice free port, we can now follow more intelligently the course of events since the loan agreement was quietly signed. The ostensible terminus of the line was placed at Haichow, a small port south of Shantung. Every skipper on the China coast knows that a port can only be created at Haichow with the initial expenditure and continuous outlay of huge sums of money, and for all practical purposes it is worthless. But Russia or her agent could not openly seek an outlet into the Yangtsze without incurring the displeasure of Great Britain, so the terminus was quietly left at Haichow, and meanwhile work was commenced and surveys made on the line itself.

HOW THE YANGTSZE WAS REACHED

We must now divert and turn to another phase of the situation to elucidate how the difficulty of the port was quietly overcome. Some years ago the concession for a line from Tsingkiangpu, on the Grand Canal, to Tungchow, at the mouth of the Yangtsze River, was granted by the Central Government to a provincial concern known as the Kiangsu Railway Company, and only a few miles of poorly constructed line had been built out of Tsingkiangpu when the funds were exhausted. All work was consequently stopped and an attempt was made to secure further capital either from the Government or by a foreign loan.

On January 15, 1913, the representative of the Kiangsu Railway Company entered into an agreement with a continental financial agent for a loan of £1,250,000 for the construction and equipment of a line from Tungchow to Tsingkiangpu. The loan agreement was countersigned by the then Minister of Communications, and thus a Government loan, without supervision, was granted for the benefit of a purely private railway. The issue price in the loan agreement was stipulated at 93, but as the financial agent had emphatically stated that he could not give more than 90, it was arranged and provided for in another clause that the difference between the real and fictitious price would be paid back to the Bankers who might take up the loan as a lump sum payment for their services in supervising the construction and equipment of the line. Needless to say no reputable Banker could be found who was ready to sacrifice his reputation by becoming a party to such a palpable attempt to deceive the Chinese public as to the real issue price, and as a consequence the loan could not be negotiated in Europe.

When it was realized that this loan was impossible and that the port of Haichow could not serve as the terminus of a through trunk line, according to Chinese reports, it was quietly arranged to change the terminus of the line to near Tungchow. The Tsingkiangpu-Tungchow line, controlled by the Kiangsu Railway Company, was nationalized, and it was then incorporated as a part of the Lung-Tsung-U-Hai line.

The result of this manœuvre is that the Belgians have quietly secured a through line from Central Asia to the mouth of the Yangtsze River, with a good port which can be developed to accommodate ocean-going steamers.

The British Government was asleep, China was hypnotized, and now they awaken again to find that another clever move has been made and that Belgium has secured for her ally the great object of her dreams, an outlet to a deep warm water port on the Pacific, and one may be excused for conjuring in one's mind a picture of the not distant future when the Russian Bear will be squatting on the north bank of the Yangtsze, near Tungchow, grinning at the discomfited Lion on the other bank at Shanghai, or Woosung, its port, while Chanticleer will crow from any and every eminence available.

THE HWAI RIVER CONSERVANCY LOAN.*

While on the subject of the terminus near Tungchow and the railway to Tsingkiangpu, we may as well devote a few thoughts to another important phase of the situation which has recently arisen in connection with this district. It is well known that the American Red Cross Society, in its great desire to assist China to preserve the lives of the millions of people whose homes are periodically swept away by the floods in the Hwai River District, sent an American engineer to survey and make a report on the best way to prevent such catastrophes in the future.

It is now common knowledge that certain interested Chinese do not want the Americans in the Hwai River district, and rather than accept the aid of the American Red Cross, they would prefer to float a loan for the proposed conservancy works with the Belgians, with whom negotiations have proceeded. As the loan will probably be for £4,000,000, and be secured on the land tax of the district as well as the reclaimed lands, this should give food for thought. Why do these Chinese desire that the Belgians should take up this loan in a district through which their great trunk line passes, and which if effected will give the Belgians or Russians a mortgage on the lands?

If the interest on an American loan should ever be defaulted, and it became necessary for the bankers to take possession, the Americans would only do so as a last resort and then only to secure their interest. But if the loan for this conservancy work were entrusted to the Belgians, who are officially a part of the Russian Group, and who hold the mortgage also on the great trunk line through the heart of the district, and control a port near Tungchow, what would occur if it became necessary to foreclose and take over and administer the security?

Would Russia ever recede from the position?

It begins to look as though the Chinese concerned have also been hypnotised by the Belgians, and that they are unconsciously being led to betray the best interests of their country. The Americans have proposed the Hwai River Conservancy work, and the loan to carry it through, as a purely humanitarian measure, for on the face of it there is no profit to them in such work other than the satisfaction of saving the lives of millions of people and reclaiming to prosperity a large district of China. In view of this, and by virtue of the claims they have to the enterprise as a result of the enormous amount of charity they have lavished on the district in the past it is quite possible that Americans will secure the work, and that at least one plan of the Belgians will miscarry.

BELGIAN REPRESENTATION IN PEKING.

When the Lung-Tsing-U-Hai Loan Agreement was signed by M. de Vos, on behalf of the Cie Générale de Chemins de Fer et de Tramways en Chine, he was particular to state in the agreement that the syndicate was domiciled in Brussells. But there is the evidence of the French Yellow Book that the company is controlled in Paris, and we know that at the time the document was signed, M. de Vos was the head of the Belgian syndicate in the official Russian Group. When the Russians were admitted into the Sextuple Group, and the Agent of the Russo-Asiatic Bank in Peking assumed the leadership of his national organization, the old concern appointed M. de Vos as the representative in Peking of the Sino-Belgian Bank, a subsidiary of the great Société Générale de Belgique.

During the negotiations for the Lung-Tsing-U-Hai railway loan M. de Vos received the active support and assistance of the Belgian Consul-General at Tientsin, M. Disiere, and it is significant that after the loan was signed, the Belgian syndicate, again following the example already created, selected him for the important position of its representative in China, and M. Desiere

* Since this article was written it has been announced that a loan to carry out the Hwai River Conservancy work, has been arranged between China and the American Red Cross Society. Particulars are given elsewhere.

now has his office with M. de Vos in the Sino-Belgian Bank, Peking. Of course this precedent had been set by other countries, who had elevated men from the consular and diplomatic service to represent their national financial institutions in China, as witnessed in the case of Mr. S. F. Mayers, formerly of the British Legation, and now head of the British and Chinese Corporation; Mr. Willard Straight, who left the American Consular service to serve his country through the management of the American Group; Herr Cordes, a graduate from the German Consular service, and others. The fact remains, however, that these men were selected for their special knowledge of the political situation in China and their intimacy with the officials rather than for their previous experience as financiers.

THE TATUNG-CHENGTU LINE

M. de Vos did not rest with his success in the Lung-Tsing-U-Hai loan. His work was only half completed and he had still to secure another line, which would obviously be the other great link for the furtherance of Russia's original dream. He had to work quickly and quietly as President Yuan Shih-kai had confided to Dr. Sun Yat-sen the right to finance and construct the future railways of China. But M. de Vos never consulted Dr. Sun at Shanghai. He remained at Peking and kept quietly at work negotiating with the Peking authorities, whom he knew and understood. The result was that on the 4th of August, last year, he was able to cable to Europe that he had at last secured the concession for the line from Tatungfu, in Shansi, near the Mongolian frontier, through Sianfu to Chengtu, the capital of the province of Szechuan. The Ta-Cheng line the Chinese have called it. It means in Chinese the "Great Achievement," a phrase possessed of considerable irony when regarded from the Russian point of view.

The "Great Achievement" was signed by M. de Vos on behalf of the Société Générale de Belgique, the important Belgian financial institution which is allied with the greater Société Générale of Paris There can be no doubt of its financial strength, and its position as the leading Belgian Bank, but when we again scan the names of the Banks composing the Official RUSSIAN GROUP, we find the name of the Société Générale de Belgique, with its subsidiaries the Sino-Belgian Bank and the Banque d'Outremer.

If the Société Générale de Belgique is a purely Belgian enterprise, what is its name doing in the Official Russian Group? It is well known that the Société Générale de Paris is largely interested in the Belgian concern of the same name, and if their interest is in the same proportion as similar combinations, and if the Russians have also a share in the loan, it would appear that the legitimate Belgian interest in the "Great Achievement" is again not what we are led to suppose.

The Chinese, perforce, were elated in the belief that they had outwitted the official Banks and brought about the crowning consummation to years of struggle against the financial monopoly. They have secured more and more liberal terms from the Belgians, and the Managing Directors appointed under the loan agreements have absolute power. They can construct the lines almost as they wish. The Belgians, it seems, have been unable to find a proper Engineer-in-Chief for the Lung-Tsing-U-Hai line and the work is progressing under the direction of assistants appointed by the Managing Director. They have brought about the "Great Achievement," and for a time they feel well satisfied with their work.

But the day of reckoning will come. It is coming. And the Chinese officials now in power are beginning to see it. The hand of Russia is as unmistakably shown in the Tatung-Chengtu Agreement, as it is in the absorption of Mongolia and the present struggle for the control of the Inner Strip.

As China is gradually forced to concede Inner Mongolia to the warlike tribes from the North, and the Inner territory comes under the influence of the so-called independent Mongolian Government, Russia will be seen reaching out to reap the reward of her diplomacy, and the Cossack will pace the Great Wall of China as the outpost of her new frontier.

In the hope of doing something to stave off this calamity, which the present rulers of China appear now to recognise as impending, a Presidential Mandate was issued on January 8 throwing Kalgan, Kweihwachang, Dolonor, Chihfeng, Taonanfu and Lungkow open to foreign trade. It is almost a forlorn hope that the merchants of other nations will be attracted there in sufficient numbers to offset the march southwards of Russia. Russia will persevere, and when the time comes, and the long talked of line from Urga to Kalgan or Kweihwacheng is finally built, Russia will find a ready-made connecting link with Peking via Kalgan and across western China from Tatung, whereby she may join hands with her ally in Yunnan; and no Power or combination of Powers in the world can say them nay.

INTERNATIONALISATION OF THE YANGTSZE VALLEY

Aims of the British Government and Interests of British Manufacturers defeated by the Official Organisation

In the preceding columns the unfolding of Russia's designs on China through the agency of the Belgian element in the Russian Financial Group, was fully described. Only one more link now remained to be forged to realize the great dream of Russia for a through trunk line from the North of China to the South in Indo-China. The French railway from Haiphong, the French port of Indo-China, now terminates at Yunnanfu, the capital of the rich Province of Yunnan, and the right to bridge a gap of a few hundred miles between Yunnanfu and Chungking, or Chengtu, the capital of Szechuan, had alone to be secured to permit plans being made for the final consummation of the magnificent scheme. Russia was debarred from openly competing because of her understanding with Britain in the Scott-Muravieff treaty, and Belgium had already done all that she could safely do without arousing suspicion, so the task of completing the scheme of the Allies now devolved upon France, with her powerful financial and political prestige to insure success.

To appreciate fully the actual situation, we must again return to 1898 during the fierce "Battle of Concessions" waged for the control of China through the medium of railways. Great Britain's open policy was to obtain control of the great Yangtsze Valley and the trade routes converging on Hongkong by the way of Canton. To secure this advantage the British obtained from China the concessions for the short lines radiating from Shanghai and Canton, and cemented their hold upon these sections. The Shanghai-Nanking and Tientsin-Yangtsze (Pukow) and Canton-Kowloon concessions were thus secured for British interests. The latter furthermore hoped to control the Yangtsze Valley by railways from Shanghai being continued to envelop the valley to the westward through the principal cities and towns along the northern and southern limits. The idea was thus conceived of extending the Shanghai-Nanking line westwards from Nanking, or rather from Pukow, on the opposite bank of the Yangtsze river, to an indefinite point on the line of the then projected Peking-Hankow railway at Sinyang, thus enclosing the northern half of the valley, while it was hoped to proceed from Shanghai, by way of Hangchow, westwards to Nanchang and Changsha, to encircle the southern portion. The scheme provided for the ultimate extension of the northern—Pukow-Sinyang—line westwards to Chengtu, the capital of the immensely rich and populous province of Szechuan.

The opportunity for demanding these last two concessions soon presented itself. As already referred to, Great Britain's interests demanded that Russia should not invade the Yangtsze Valley, and at all hazards she should defeat any project which would supply the means for Russia on the North to make a union by a line from Peking with her ally on the South. Russia was striving hard through her Belgian agents to obtain control of such a trunk railway, while the British Government was as zealously doing its utmost to defeat the scheme, but, as noted, the Belgians gained the day. The Chinese were hoodwinked and the contract for the Peking-Hankow line went to Belgium after a solemn assurance from the Chinese Government to the then British Minister that no concession admitting Russian participation would receive the Imperial sanction.

The British Government demanded immediate compensation for the slight and affront to its dignity, and China had to

The result of the letter of the Manager of the Hongkong and Shanghai Banking Corporation to the Foreign Office was the early organization of the British and Chinese Corporation, Ltd.,* and to this new combination was entrusted the honour of safeguarding and protecting the interests of Great Britain and of securing to British manufacturers the tangible fruits of the Government's diplomatic victories.

The organization being a purely commercial one, and as neither the Bank nor the Commercial firm had any previous experience in railway construction, the usual official departmental system of construction was adopted, as by that means the Corporation could derive a legitimate and continuous profit by acting as the Purchasing Agents in connection with the loans for all materials purchased abroad. Like its prototype, the Crown Agents for the Colonies, in England, it confined its activities to appointing engineers to build the lines, and to supervising the purchase and shipment of materials.

SQUEEZING OUT INDEPENDENT INTERESTS.

With all the concessions secured from China through the pressure of the British Government duly handed over to its charge for execution, the British and Chinese Corporation thus became the official railway organization of its Government in China. With full confidence in its ability to build the lines creditably, and with absolute faith in its patriotism and loyalty to British interests, the British Government extended to the new combination a monopoly of its official support, and discouraged all competition by other responsible British railway builders.

From time to time other British railway constructors endeavored to secure a footing in China, but were compelled to retire after severe financial losses, and leave the field to the undisputed control of the official commercial organisation. Although reputable British contractors, who have successfully constructed thousands of miles of railways in other parts of the world, have at various times offered to build railways for the Chinese Government at lump sum contract prices 25 to 33% under the prevailing costs of departmentally built lines, they have been systematically opposed and driven from the field. The Chinese Government, who had to pay the bills, and who would have profited by having its railways constructed more economically and expeditiously, was forced to sit still and meekly acquiesce in the system. The British and Chinese Corporation, however, once it secured the official concessions, commenced to consolidate its hold on the railway field in China and to eliminate all competition.

Notwithstanding the fact that these railway concessions were given to the British Government as purely British lines, and that the British Government entrusted its national interests to the British and Chinese Corporation, it is on record that on February 1, 1899, the Corporation entered into an agreement† with the American-China Development Company, who, at that time, held the concession for the construction for the Canton-Hankow railway, in which the British and Chinese Corporation agreed to give the Americans a certain participation in the concession for the Canton-Kowloon railway in exchange for a similar participation in the Canton-Hankow line, and, furthermore, the parties agreed to offer to each other a participation of one-half interest in any business thereafter obtained in the Empire of China.

Although this agreement is no longer in force, yet it constituted a precedent which at that time received the sanction of the British Government, and which the British and Chinese Corporation has extended to cover the other concessions entrusted to its care.

In the original concession granted to the Pekin Syndicate, Limited, it was given certain railway rights from the mines in Honan to the nearest navigable water, and the question arose of constructing a railway from the mines to Pukow, on the Yangtsze. The rights of the Pekin Syndicate thus conflicted with the concessions granted to the British and Chinese Corporation (Tientsin-Pukow, and Sinyang-Pukow lines) which had the port of Pukow as their base.

CREATION OF THE CHINESE CENTRAL RAILWAYS, LTD

To avoid conflict and competition the two companies amalgamated their railway rights north of the Yangtsze river under the style of the Chinese Central Railways, Limited,* in the organisation of which the British and Chinese Corporation secured the controlling interest. As subsequent events have disclosed the official British Corporation made their first mis-step by this amalgamation, for although the Pekin Syndicate, Limited,† is registered as a British Company, a large percentage of its shares are held in France and Belgium, carrying representation on the Board of Directors. The British and Chinese Corporation thus shared their interest in two live and valuable concessions in exchange for the elimination of the claim of the other syndicate to a line terminating within its sphere of activity. Competition with its main business was, however, thereby defeated, and the official Corporation was ostensibly left in command of the railway situation north of the Yangtsze.

The British objective, as already stated, was to secure an extension of the Pukow-Sinyang line to Chengtu, in Szechuan, and the continued efforts of the Legation and the Company were concentrated in persuading the Chinese to cede the right. At the same time a group of French and Belgian capitalists, headed by the Banque de l'Indo-Chine, were also deeply interested in securing the concession for a line from the Hankow-Sinyang district westwards to Chengtu, and were bringing political pressure to bear on the Chinese Government for this purpose.

Two American syndicates had previously entered the field for the same concession and the then American Minister (Mr. Conger) at Peking approached the Chinese Government on their behalf as soon as it became known that a French combination was active. The Waiwupu in its perplexity between the claims of the various syndicates compromised by promising the American Minister in writing that if foreign capital became necessary for the construction of the line, preference would be given to Americans and British, who were the first applicants.

Dangerous competition thus entered the field to wrest from the British Corporation the right for this exceptionally valuable commercial and essential British political line and to avoid any possible interference with its commercial plans, and apparently disregardful of national considerations, the British Corporation entered into an agreement with the group of French capitalists and absorbed them by surrendering a large share of the

* The British and Chinese Corporation was registered on May 24, 1898, to carry on in China or elsewhere the business of contractors for public works, etc. The authorised capital is £250,000 in shares of £100, all of which has been subscribed, and £125,000 or £50 per share, called up. The accounts are made up annually to June 30, and submitted in November.

†The agreement appears in the British Parliamentary Bluebook, China, No. 1 (1899, page 325.)

*The Chinese Central Railway Company, Limited was registered on January 7, 1904. The authorised capital is £101,000 in shares of £1, £100,000 being in ordinary shares and £1,000 in deferred shares, and the whole amount has been subscribed, and £41,000 paid up, the ordinary shares having 8s. called, and the deferred shares being fully paid. The deferred shares are entitled to receive half the profits of each year (which the directors may determine to divide) after the holders of the ordinary shares for the time being issued shall have received in dividends a sum equal to the amount paid up thereon, and upon any return of capital in a winding-up or otherwise the deferred shares are to be entitled to participate pari passu with the ordinary shares for the time being issued until the full amounts of the capital paid up on both classes of shares shall have been returned, and thereafter the deferred shares are to be entitled to have divided amongst them one-half of any surplus assets. Voting power, one vote for every ordinary share, and 100 votes for each deferred share.

†The Pekin Syndicate, Limited, was registered on March 17, 1897, for the purpose of obtaining and developing concessions for mining, railway, and other undertakings in China. In May, 1898, the syndicate acquired the sole right for sixty years to open and work coal and iron mines and petroleum deposits throughout certain specified districts in the province of Shansi, China, covering an area of approximately 20,000 square miles, and shortly afterwards a contract on similar terms was signed covering all that part of the province of Honan which lies to the north of the Yellow River. Certain railway rights were given under the concessions. The Chinese government is to receive a royalty of 5 per cent. on the prime cost of all minerals extracted; and of the net profits, after providing for 6 per cent. interest on capital employed, and setting aside 10 per cent. of the profits as a sinking fund the Chinese government is to receive 25 per cent.

national rights in the Pukow-Sinyang line which were entrusted to their charge for safeguarding.

THE 1905 AGREEMENT AND MONOPOLY

As this agreement* has materially modified the position of Great Britain in the Yangtsze Valley a brief synopsis of its principal clauses should prove illuminating. It was signed between Carl Meyer, of London, on behalf of a British Group consisting of the British and Chinese Corporation, Limited, the Pekin Syndicate, Limited, and the Yangtsze Valley Company†; and by Stanislas Simon, representing a body of French capitalists, consisting of the Banque de l'Indo-Chine, the Comptoir Nationale de Escompte de Paris, the Société Générale, the Regie Générale de Chemin de Fer, and Messieurs N. J. and S. Bardac, and by the Chinese Central Railways, Limited.

The object of the agreement was to form a new combination for the monopoly of railway construction in the Yangtsze Valley, especially as concerned the Pukow-Sinyang and Sinyang-Chengtu railways. The essential feature of the agreement was to combine for the purpose of opposing and defeating all competition with the new Company in their plans for the construction of Chinese railways.

In the distribution of the 100,000 shares of the new Company, the French were to allot 7,500 shares out of their 50,000 to a Belgian Group, or the Compagnie Internationale d'Orient, and the Belgian Group were in turn to transfer 2,500 of these shares to the British Yangtsze Company, Limited; the British Group were also to allot 5,000 of their shares to the Belgian Group, and a further 7,500 shares to an approved American Group, and, in the event of the Americans not participating the final allotment of the shares would be 45,000 to the French, 45,000 to the British, and 10,000 to the Belgians.

The object of the agreement as set forth in the document is, in part, as follows, "and whereas the Chinese Central Railways, Limited, is at present entitled to the benefit of two agreements for railways to be constructed from Pukow to Tientsin, and from Pukow to Sinyang, and whereas the Company has been negotiating for some time past to obtain a concession and other rights in connection with a railway from the Hankow-Sinyang district to Chengtu and the French Group have been for some time negotiating to secure a concession for a railway from Hankow to Chengtu and have come into competition with each other, and for putting an end for such competition the Company and French Group agree to associate themselves in the manner and on the terms appearing."

Article 8 of the agreement provides that "The engineers and other Europeans engaged upon the said railway from Pukow to Chengtu, and of each railway that may be formed or controlled by the Company (other than the railway from Pukow to Tientsin) shall, so far as possible, be in equal proportions of British and French nationalities, and all orders for materials and rolling stock and plant and all contracts for construction of said railways (other than aforesaid) shall be divided in equal proportions between British and French manufacturers and contractors."

Article 11 says: "*The British and French Groups shall respectively agree that so long as they hold any share in the company respectively they will respectively use their best endeavors to oppose and defeat any schemes competing with the Company's main business.*"

The above agreement, then, discloses that whereas the administrative control remains in the hands of the Chinese Central Railways, Limited, the financial control passed to the French and Belgian bankers.

FRENCH AND BELGIAN CONTROL OF A BRITISH COMPANY

In the amalgamation of the Pekin Syndicate with the British and Chinese Corporation for their railway rights north of the Yangtsze River, the official organisation contributed as its assets two *bona fide* acknowledged railway concessions (the Tientsin-Pukow and the Sinyang-Pukow lines) and naturally secured the controlling interest of 60 per cent. of the stock of the orignal Chinese Central Railways, Ltd. The Pekin Syndicate, whose only asset was an indefinite claim for a line from the mines to deep water at Pukow, secured only 40 per cent. of the shares of the company. The exact proportion of the shares of the Pekin Syndicate, Ltd., held in France and Belgium, can only be ascertained correctly by reference to the books of the syndicate itself, but it is generally accepted that the French hold the controlling interest, and the Editor of the *Peking Gazette* recently made the statement, which has passed unchallenged, that the French interest in the Pekin Syndicate was 90 per cent. If only 50 per cent. is accepted as the French participation it is sufficient for the point we desire to accentuate. In the last Annual Report* of the Syndicate, published in December, the Directors publicly state that the Syndicate participates as to about 20 per cent. in the Chinese Central Railways, Ltd., which is their proportion of the shares allotted under the 1905 Agreement. This document allots 55 per cent. of the shares to the French and Belgians. If we add to this the proportion of French holdings in the Pekin Syndicate, or, say, 50 per cent., and the Syndicate has a 20 per cent. share in the Chinese Central Railways, Ltd., it is quite clear that the actual position of the French and Belgians in this British Official institution would be 65 per cent., or if the Editor of the *Peking Gazette* is sure of his facts, it would be increased to about by 3 per cent.

In other words, the Chinese Central Railways, Limited, which poses as the official British institution in the Tientsin-Pukow and the Pukow-Sinyang Railways, is no longer a British company except in name only, and proves irrefutably that the great British Government is being utilized as the catspaw of international finance to force through French and Belgian interests in China.

CHINA IN A FALSE POSITION

The change in the status of the Company was kept a profound secret, for no copy of the agreement was ever filed with the Chinese Government, who was most vitally interested, nor was it published. It is difficult to believe, too, that the British Government could consistently recognise or condone the stipulations of the agreement and preserve "face" with the Chinese, for we find that the official British Corporation deliberately handed over fifty-five per cent. in this purely British undertaking to the very interests to which China had granted the Peking-Hankow concession in 1898, and for which act she was penalised.

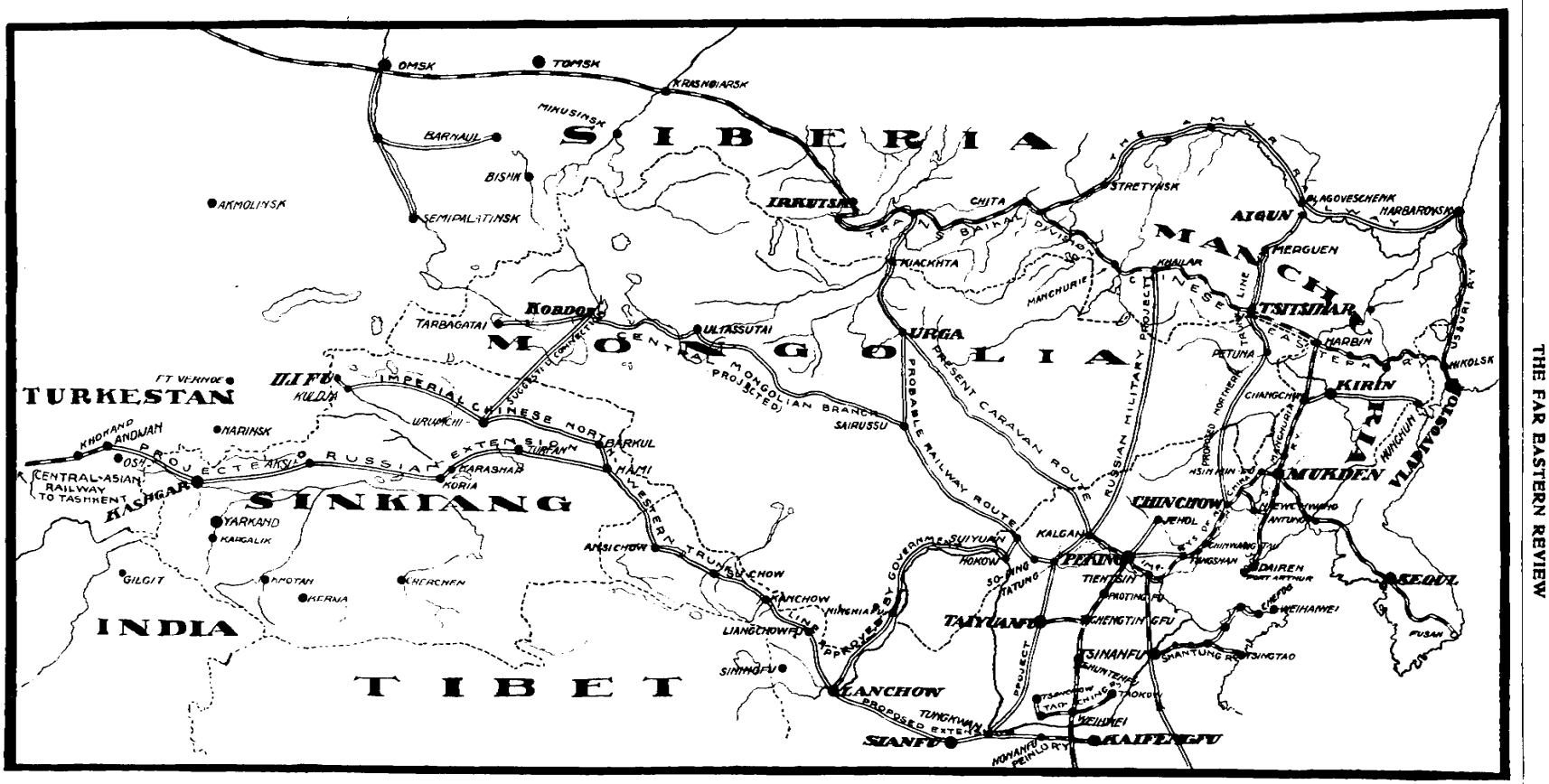
China was punished by Britain for granting this concession to Belgium and we know that on the authority of the French Yellow Book 60 per cent. of the Peking-Hankow syndicate shares were owned in France, yet the British official Corporation, after they had been paid the fine wrung from China, complacently divided the spoils with the French and Belgians. Was it a wilful insult to China or a simple betrayal of the national interests entrusted to their care?

* The agreement is reprinted on page 305

† The Yangtse Valley Co., Ltd. was registered on December 28, 1900, in amalgamation of the Yangtse Valley Syndicate, Ltd., registered on May 27, 1899 and the Upper Yangtse Syndicate, Ltd., registered on June 27, 1899, to deal with properties and concessions in China. The authorised capital is £500,000, £200,000 being in priority shares of £1, £299,775 in ordinary shares of £1, and £225 in deferred shares of 1s. The priority shares are entitled to receive out of the first profits of the company dividends amounting in all to 100 per cent., and when such dividend shall have been paid all distinction between the priority and ordinary shares is to cease, and the net profits are then to be divided—50 per cent. amongst the ordinary shares, 40 per cent. amongst the deferred shares, and 10 per cent. amongst the directors. Only seven of the ordinary shares have been issued; of the priority capital £96,150 has been subscribed and paid up, and all the deferred shares have been fully paid. The company holds 96,800 fully-paid shares of £1 in the Electric Traction Company of Hongkong, Limited; 1,710 fully-paid shares of £1 in the Association General, Limited (the pioneer of the Singapore Electric Tramways, Limited); 2,500 ordinary shares of £1 (8s. paid), and 20 fully-paid deferred shares of £1 in the Chinese Central Railways, Limited; a one-fourth interest in the Province of Yunnan concession, held by the Syndicat du Yunnan, Limited; 5,000 ordinary shares of £1 (5s. paid), and 730 deferred shares of £1 fully paid in the Nippon Syndicate, Limited; and 2,000 ordinary shares of £5 (£1 5s. paid), and 250 deferred shares of 1s. (fully paid) in the British and Japanese Finance Corporation, Limited).

*The report of the Pekin Syndicate is published on page 310.

MAP SHOWING CHINA'S PRE-REVOLUTION RAILWAY PROGRAMME IN MONGOLIA AND SINKIANG



This map illustrates the plan the Chinese Government had in view in 1910 to counter the march of Russia through China. At that period there was considerable activity shown in certain circles to obtain the concession for the line through Sinkiang and Kansu into China—along the route now followed, in fact, by the Lung-Tsing-U-Hai Railway. The Chinese Government then talked of building a line with Chinese capital from Ili-fu to Lanchow, with an extension to Honan-fu, and with a line running from Lanchow north-eastwards to Hokow, on the Yellow River, where it would connect with the Kalgan extension, which is now being built. Likewise they projected the line from Tatung, south-west of Kalgan, southwards to Tungkwan to the south of Shansi province, which is now in the hands of the Belgians. The ideas of the Government of that day, however, have been lost sight of. The revolution altered conditions, and the line from Turkestan to Kaifeng, and from Tungkwan to Tatung, are in the hands of those whom the Chinese of 1910 did not wish to see in control. Comparison of this map (which is reprinted from the FAR EASTERN REVIEW of March, 1910) with the one specially drawn to illustrate the present day situation will be interesting as showing the advance which has been made by the interested Powers since the Revolution

In view of the facts connected with the granting of the Pukow-Sinyang concession to Great Britain it is clear that the British Corporation surrendered the interests they were selected to safeguard, without due regard to the position of the Chinese Government, or the honor of the British Government. Somebody blundered. And by signing the final Sinyang-Pukow loan agreement in November last with the Chinese Central Railway, Limited, the Chinese Government has again been placed in a false position with respect to the British Government for it has unwittingly been led into a similar position to that in which it found itself in 1898. China becomes a party to another "breach of faith" by signing a contract for a purely British concession with a company whose financial control is vested the French and Belgians.

THE BRITISH GOVERNMENT COMPROMISED.

The essential feature of the agreement entered into between the British and French groups in 1905, was to do all in their power to oppose and defeat all competition with the Company's main business. The Company's main business was the financing and construction of railways in China under the departmental system which provided for the purchasing of materials through the banks acting as Purchasing Agents and receiving a commission of five per cent. for their services.

It is this feature which places the British Government in the most compromising position with its own independent financiers and manufacturers, for the Government, by supporting the agreement, becomes a party to the maintenance of an unjust monopoly fastening on China the most expensive system of railway construction, and obstructing the right of independent British manufacturers or railway contractors to do business with China.

The fact that this monopoly, under the protection of the British Government, was used to defeat all competition has been fully attested to by the experience of independent British manufacturers and contractors who have spent large sums in the useless endeavor to do business in China, and which, on several occasions, has led to official protests against the system.

As it is professedly against the principles of the British Government to discriminate in such matters and uphold a combination in restraint of the rights of other legitimate British enterprises, the existence of the agreement has been carefully concealed. Otherwise those firms who have unsuccessfully tried to conduct business in China would have a legitimate grievance and legal rights to compensation for the losses involved. Leaving these phases of the situation out of the question, however, it is clear that the monopoly did exist, and that the essential features of the Anglo-Franco-Belgian 1905 combination, having the support of the British Government, was to oppose and defeat all competition with the main business of the Company.

Rightly or wrongly the British Government has been made a party to this agreement by its continued support to the Company, thereby creating a precedent contrary to all ideas of a free government.

WHY INDEPENDENT FIRMS COULD NOT DO BUSINESS.

The situation arising out of this monopoly bears an important relation to the organization of independent British engineers to advance their interests in China. In the issue of THE FAR EASTERN REVIEW for August, 1911, was published a comprehensive review of the question of supplying Chinese railways with materials, and for special reasons, the article was written on behalf of American manufacturers, although the main argument was equally in support of the independent British manufacturers. It was entitled, "THE VIOLATION OF THE OPEN DOOR BY CHINA, or the reasons why American Manufacturers of Railway Materials could not secure Fair Play in the Awarding of Tenders under the present system of Railway Construction."

Although the 1905 Agreement was in our possession at that time, and we were fully cognizant of all the situations which had arisen as a consequence of the monopoly, we refrained from publishing or quoting it, feeling sure that the British Government was not officially aware of its existence.

We recognized at that time that the independent British manufacturers and their agents in China could never hope to secure free scope to obtain business under a system which delegated to a commercial concern the sole purchasing rights for the materials to be used in the construction of the railways.

In all of the British railway loan agreements with the official group, the departmental system of construction has been rigorously enforced, and the purchasing rights have always been delegated by the Corporation to the commercial firm of Jardine, Matheson & Co., one of its component parts.

As this firm is also the active selling agent for certain British manufacturers of railway material, rightly or wrongly the idea has been created in the minds of their competitors, that they favoured the manufacturers whom they represented.

There are many instances where this is not true, and where the independent firms have secured large orders in direct competition with the firm. It is only fair to state that the position of Jardine, Matheson & Company in this matter is an extremely delicate one, and they are able fully to justify their position. For although this firm acts as Purchasing Agents for the railways under construction, the actual awarding of the tenders has been made by the Managing Director of the lines, and the firm, thus relieved of the responsibility of being the actual purchaser, has at times openly competed for tenders, which were subsequently turned over to them for execution. There may be many fair and reasonable arguments adduced to justify a firm acting as the official purchasing agents for railways secured by the British Government to advance the national interests, in submitting tenders in competition with other firms, but a caretul examination of all the points involved, indicates that the attitude is ethically incorrect. By permitting themselves to be placed in this false position, the official British Purchasing Agents have incurred the open hostility and criticism of the independent British manufacturers and their agents, who have failed to secure business in China. Several protests have been made to the British Legation against the operation of this system, but no steps were made to rectify the unfortunate situation until recently when the British Government was compelled by the danger of losing the important railway contract secured by the independent firm of Pauling and Company, and by the "Belgian" successes, to recognise that a change of policy was absolutely compulsory.

Under the terms of the 1905 Agreement, with its essential feature to oppose and defeat all competition with the company's main business, the British Government unfortunately become as party to this method of conducting business, and is open to the severest criticism from the British engineers and manufacturers for the maintenance of an unjust and unholy monopoly.

THE BRITISH ENGINEERS' ASSOCIATION

The failure of the independent British engineering firms to secure a fair share of the railway business in China, led to the organization of the British Engineers' Association. The organizers ascribed the failure of British engineers in China to the operation of American and German diplomacy and their commercial methods, being ignorant of the 1905 Agreement by which their rights had been transferred to France and Belgium, and under which their Government was a party to barring them from the field.

Eastern Engineering in its ignorance of the fundamental facts underlying the situation, rather narrow-mindedly ascribed the failure of British engineers to the machinations of THE FAR EASTERN REVIEW, and bitterly condemned us as being anti-British for our open comments on the very facts which gave justification for the formation of the Association. The paper has since carried on a systematic campaign amongst the engineering firms of Great Britain to undermine our position and destroy our usefulness, but if those firms will pause to realise how the Pauling contract, with its great possibilities in the way of sale of railway materials, got to England, and how the policy of the British Government was changed,—which facts *Eastern Engineering* ought to make known,—their eyes will be opened to a true conception of the situation.

With the publication in full in this issue of the 1905 Agreement, the independent engineers can now appreciate the full force of the reasons why they could not secure fair play in the construction of Chinese railways and in the supply of materials, and they will now fully understand the inner reasons which compelled them to organize in order to compete.

If the independent British engineers and contractors have a legitimate grievance, what can be said of the position of the Chinese Government, compelled as it was to submit to and accept the ironclad conditions of the extravagant departmental system of construction forced on it by the Banks and the foreign Governments in order to maintain a monopoly, the chief feature of which is the side profit to the Banks in the shape of the purchasing commission?

The services of the best purchasing agents in Europe or America could be secured on the payment of two per cent. commission. In the division of the five per cent. among the four groups in the Hukuang Railway Loan, one per cent. is set aside to defray the actual cost of conducting the purchasing by the two Agents, while the remaining four per cent. is divided equally between them!

EXCESSIVE COST OF RAILWAY CONSTRUCTION

It is no exaggeration to state that the cost of constructing railways in China under the cumbersome departmental system, has been 25 to 33 per cent. higher than the cost would have been if the construction had been entrusted to experienced and reputable railway contracting concerns. But the construction of railways in China under contract, with experienced builders, would terminate the rich and profitable departmental system, with its tidy five per cent. purchasing commission for the commercial end of the official organizations and thus interfere in its main business. So to preserve the system, and prevent the Chinese Government from ever realizing the truth by the admission of contractors to the field, the entire power and influence of the official groups has been brought to bear in opposition to their entrance.

When the British and Chinese Corporation was first organized in 1898, the leading firm of British railway contractors was admitted as a shareholder and an agreement was reached whereby the firm would construct under contract the Shanghai-Nanking line. The commercial element in the Corporation was, however, able to prevent the construction of the line by contract, and carried on the work departmentally. The construction cost of the line was £11,000 per mile. It may be said, however, that the average cost of constructing railways in China under the departmental system is about £9,000 per mile over ordinary country. There are no figures for contract work, except the cost of the Pekin Syndicate Railway (the Tao-Ching line) which was constructed under contract by the great British firm of engineers, Messrs. Pearson & Sons, and which exists to-day as one of the best built lines in the country. The actual cost of the line was under £7,000 per mile, which included the contractor's profit. This is £2,000 under the average cost of departmental built lines and £4,000 per mile cheaper than the Shanghai-Nanking railway. And for the purposes of Chinese traffic the Tao-Ching line meets the requirements of the country as well as the more expensive line.

Messrs. Pauling & Company, Limited, the greatest firm of railway builders in the world, signed a contract with the Chinese Government to construct and equip the Chinchow-Aigun Railway to the same specification as the Peking-Mukden line at a lump sum cost of £7,885 per mile. This provided for their profit, which indicates that the actual cost of the line would be about £7,000, or perhaps less. This corresponds with the actual cost determined by Messrs. Pearson & Sons on the Tao-Ching construction, and corroborates the argument of the lower cost when the work is carried out by experienced railway builders with an efficient organization to carry on the work.

Messrs. Pauling & Company also tendered for the construction and equipment of the Anhwei Railways for Lord Li Ching-fang, at a lump sum cost of £6,200 per mile, also to the same specification as the Peking-Mukden line, thus again indicating that the actual construction cost would have been under £6,000. This company furthermore approached H.E. Chang Chih-tung and offered to construct and equip the Canton-Hankow Railway to the same specification as the Shanghai-Nanking line for a lump sum of £8,000 per mile, indicating again that the actual cost would have been about £7,000 per mile, or £4,000 less than the Shanghai-Nanking line constructed under the departmental system.

STIFLING OF FREE COMPETITION.

These figures speak for themselves. They are official and on file in the records of the Chinese Government. They have been made by the most experienced British railway builders, whose names are a guarantee that the lines would be well constructed and so serve as an ample security for the bondholders. And yet, for fifteen years, with these figures staring them in the face —figures which must have convinced the most sceptical of the excessive charges of the departmental system—the official group has been able to hypnotize the British Government into opposing the entrance of the leading British contractors in the Chinese railway field. Both Messrs. Pauling & Co., Ltd., and Messrs. Pearson and Sons enjoy the reputation of being the most experienced railway and engineering contractors in the world, and the former concern alone has successfully constructed under the contract system thousands of miles of railways in different parts of the world to the entire satisfaction of the Governments and the Banks concerned. They constructed over 2,500 miles of railways for the Rhodesian Government alone. Yet with this magnificent record this British firm was never permitted seriously to compete with the official organization in China, until the representative of Dr. Sun Yat-sen negotiated a contract with them direct in London, and which was eventually signed in Shanghai without the interference of the British authorities or the knowledge of the official organization.

So for fifteen years China has been debarred from her legitimate right of free competition in the construction of her railways, and compelled to pay millions in tribute to a system whose only excuse for existence was the support of the various foreign Governments to the Banks who had inaugurated the purchasing commission to increase their profits without due regard for the interests or welfare of China, who had willy-nilly to pay the bills.

With the above exposition of the facts surrounding this phase of the matter, we may now return to a further consideration of the operations of the official syndicate.

THE PUKOW-SINYANG AGREEMENT

For several months past the British Legation has been urging the Chinese to comply with their obligations and give effect to the preliminary agreement for the Pukow-Sinyang Concession signed in 1898, and, on November 14 last, the final agreement was duly signed by the Ministers of Communications and Finance for the Chinese Government of the one part and by the representative of the Chinese Central Railways, Limited, of the other. It has taken about 15 years to get this through, and British interests were highly elated at the ultimate success of the long-drawn out Yangtsze concession.

The final Pukow-Sinyang agreement was signed as a purely British undertaking, providing for the appointment of British engineers and the purchase of the materials from Great Britain.

Even the French were happy. They were joyous and heartily congratulated the British on their success, for were they not equally interested, and, with the Belgians, did not 55% of the profits pass into their coffers? *Vive l'entente cordiale!* It was only another happy illustration of the friendly, sympathetic co-operation of international finance. This jubilation on the other side of the Channel came, however, as a sort of surprise to interested sections in Great Britain who could not account for such unseemly joy, and refused to understand how the French could be so deeply interested in what had always been held as the crowning triumph of Britain in the Yangtsze Valley.

Who had blundered? The representative of the Chinese Central Railways in Peking, who should have remembered the agreement under which his Company was operating, had apparently forgotten all about its existence, and, in negotiating the final Pukow-Sinyang contract with the Chinese,

had overlooked the fact that the French had equal rights to the appointment of engineers and in the supply of materials. Of course, this was only a trivial oversight, readily adjusted among friends, but one which would be difficult of explanation to the British public and the British manufacturers when half the orders for materials were placed in France and French engineers appeared on the line.

The French insist on adhering to the terms of the 1905 agreement, but the British Government cannot publicly admit that after exacting the penalty from China it had turned round and divided it with France and Belgium. The only honorable course to pursue would be to cancel the concession rather than suffer the loss of prestige involved in recognition of such a doubtful transaction.

ON THE HORNS OF A DILEMMA

The British Government is placed in the position of being false to China; of having to incur the displeasure of France, and of antagonising its own manufacturers. Notwithstanding all the pronouncements of British policy in China, the careful delimitation of the Yangtsze Valley as a special British preserve, and the erection of a ringed fence to keep trespassers out, the gate had been deliberately unlocked by the guardians, and the French and Belgians, with their Russian partner, were secretly admitted within the sacred precincts, and quickly became busily engaged in garnering the rich and choice financial plums from the Celestial orchard.

The Pukow-Sinyang agreement of November last, which compelled the disclosure of the secret 1905 contract, determined the British that their frolicsome and adventurous French and Belgian play-fellows must be induced to vacate the garden of Eden before all the ripe fruit was plucked from the trees and before the facts became known to the British public.

While all this was going on and the British were apparently justly indignant to find their adventurous rivals inside the fence, and while they were seriously devising schemes to get them out, another gleeful and vivacious claimant for concessions gambolled into the Valley—aided this time by its Celestial sweetheart—sat down under the shade of the two trees bearing the largest and most juicy fruit, and notified the others that it had decided to take what it could as its share. This daring and impudent intruder introduced himself as M. le Banque Industrielle de Chine, s'il vous plait! domiciled in Paris, where he had contracted a left-handed marriage with a Chinese affinity, who had graciously presented him with these special trees as a wedding present.

This sublime audacity staggered the British, as one of these special trees flourished at Hankow while the other grew within the confines of Pukow, the great future port for the lower Yangtsze, the terminus of the Tientsin-Pukow, and the Sinyang-Pukow lines, and the stepping off place to the Shanghai-Nanking line; or in other words, the most sacred spot marked out by the official British Company (the Chinese Central Railways, Limited) as its special sphere of activity.

The agent of the Chinese Central Railways, Limited, exploded when he was informed of this invasion into the holy of holies, and forthwith protested against the impudence of the unwelcome financial roisterer who had secured possession by a secret loan for the development of the ports of Pukow and Hankow. The two great centres of Britain's sphere had therefore been appropriated by M. le Banque Industrielle de Chine, under their very noses. This was too much. French trespassers must be taught a lesson. They must be cajoled to run away and play somewhere else or be ejected, but it would appear that the intruder possesses some claim to a share within the ringed fence, for it is an offspring of one of the great syndicates comprising what is known as the Chinese Central Railways, Limited, which, as has been previously explained, owes its origin to the amalgamation of the British and Chinese Corporation with the Pekin Syndicate, Limited. The latter, although a thoroughly respectable British registered concern, has, as already explained, most decided French and Belgian proclivities, which may account for the unusual readiness of the Chinese Central Railways, Limited, to enter into the 1905 compact.

THE BANQUE INDUSTRIELLE DE CHINE

The Banque Industrielle de Chine came into existence during the month of January, 1913, when the French promoters secured the co-operation of the Chinese Government by admitting the Chinese to a one-third interest, and during the first week in June last the shares were offered to the public in London and Paris. The capital was francs 45,000,000, divided into 87,000 ordinary shares of francs 500 each, with 3,000 founder's shares of francs 500 each. The significant feature of the prospectus issued to the public was the fact that 40,036 ordinary shares were reserved for subscription at par for the shareholders of the Pekin Syndicate, Limited, and two directors of the Syndicate were the promoters of the bank. We find on analysis that the distribution of the shares would be about as follows, if the prospectus preference was taken up.

Chinese Government, one-third	29,000
*Pekin Syndicate shareholders	40,036
Public subscription	17,964
Total	87,000

These figures would indicate that the actual control of the bank is, or could have been, in the hands of the shareholders of the Pekin Syndicate, a strictly British offiicially registered organisation, which in this new concern, transferred its allegiance under French Company laws. And it also discloses that the Pekin Syndicate, Limited, one of the official custodians of British rights in the Yangtsze Valley, deliberately participated in the organisation of a bank under the laws of France, the first transaction of which was to steal away the rights entrusted to its care by the British Government. Was there ever such a pitiful picture of financial intrigue and deceit?

The sublimely ridiculous picture is also presented of the British agent of the Chinese Central Railways, Limited, protesting in virtuous indignation against the trespass on the preserves of his company by the loan signed for the re-building of Hankow, and the construction of a port at Pukow by the French Banque Industrielle de Chine, a subsidiary of one of his own principals. *And the British Government protests against China for attempting to internationalise the Yangtsze Valley, when in reality China was but following the path laid by the British official organisation when it shared the British concession for the Pukow-Sinyang railway with French and Belgian interests and thereby itself internationalised what the British Government believed to be its particular sphere.*

POSSIBLE FRENCH REPRISAL

In the meanwhile, nettled at the hesitancy to comply with the honest provisions of the 1905 compact, the French, with the innate sagacity of the nation, are not awaiting quietly the final shove that will oust them from their share of the concession. They are showing no outward signs of displeasure against the wave of patriotic British sentiment to hold the Yangtsze Valley as a British preserve. No, China is extensive and wealthy in resources, and there are other quiet corners where valuable rights can be acquired simply by asking the Chinese Government for them. And the Chinese are just waiting to be asked.

Now it happens that the British and French Government have a mutual understanding to share equally in any railway construction in the provinces of Yunnan and Szechuan, though is is not clear whether or not this understanding extends to the French interests in the Szechuan section of the Tatung-Chengtu line, recently granted to the Société Générale de Belgique. It would be interresting to know.

In the great through western trunk line which will connect Russia on the north and Yunnan on the south the line from Yunnanfu to Chengtu or Chungking had still to be provided for. What is more natural than that the French Government at this psychological moment should kindly request the Chinese for the right to construct the line from Yunnanfu to Szechuan well knowing that the friendly officials could not say them nay? And what is more natural, after securing this choice section from China, than that the French Government should politely convey

*See report of the Pekin Syndicate on page 310 of this issue.

its compliments to the British Government and add that it could have the Pukow-Sinyang line to itself, while the French, in view of the hesitancy of the British to acknowledge their rights under the 1905 agreement, were consequently reluctant to admit the British to a half share in the Yunnan-Chungking or Chengtu line, and would therefore construct the railway without their assistance ?

A brilliant stroke of diplomacy ! France would gain for the loss of her share in the Pukow-Sinyang line the sole rights to a through railway from Haiphong to Chungking or Chengtu, or both. At Chengtu she would link up with the " Great Achievement " of the Russo-Belgian combination, thus clasping hands across China with her ally on the north, and also would have the control of a large section of the line eastwards to the Hupeh border as provided for in the Paris meetings of the Hukuang negotiations—a section which is shortly to be proceeded with, as reported elsewhere.

Once this last link is in her control France will dominate the entire west of China and divert all the trade to her port of Haiphong. The line from Yunnan to Nanning, which has already been promised to her by the kindly Chinese, will then be shelved and never be built, so that control of the west will not pass from her hands.

This situation, so disastrous to China, has been brought about by the failure of the official British Group to recognise the rights of the French in the Pukow-Sinyang loan agreement. It is a situation fraught with the greatest danger to China. The granting of the Yunnan-Chungking or Chengtu line as an exclusive French concession would constitute the last nail in China's coffin. The coffin is prepared, the corpse enclosed, and the undertaker stands ready, hammer in hand, to drive the nail home.

The French Minister, while this article was being written, actually secured from China the right to construct the Yunnan-Szechuan railway for French interests.

The Chinese, as usual, have been compelled to bow to the inevitable, and Great Britain has received a severe set-back from France, solely as a result of the grasping aspirations of the Official British Group. In November of last year an Anglo-French syndicate, represented in Peking by a British subject, endeavored to obtain the right to build the Yunnan-Chungking or Chengtu railway, and, by virtue of the combination of French and British interests and the agreement existing between the two Governments to share railway enterprises in Yunnan and Szechuan, stood an excellent chance of receiving the full support of the French Minister. In fact we are not wrong in saying that support was promised by the French Minister, but he was compelled to modify his attitude immediately upon the signing of the Pukow-Sinyang agreement on November 14 last and the consequent development of the situation created by the official British organisation. The deliberate disregard of French claims in the Pukow-Sinyang agreement compelled the French Minister to act promptly, and immediately he began to look after the interests of an organisation more French than British. So rapidly did things move, indeed, that the Anglo-French Syndicate was completely side-tracked, and, by January 21, an option was signed for the Yunnan-Szechuan line—with whom ? With that interloper in the Yangtsze Valley, the *Banque Industrielle de Chine !* And thus France gave Britain the Roland for her Oliver.

REASONS WHY THE 1905 AGREEMENT STANDS.

In the meantime the 1905 Agreement has been the subject of considerable discussion. It is claimed that in signing the final Pukow-Sinyang Agreement and ignoring the provisions of the 1905 Agreement for the equal participation of the French in the supply of materials and the appointment of engineers, the representative of the Chinese Central Railways, Limited, must have overlooked the most vital essential in the reasons for the agreement. As the final Pukow-Sinyang Agreement was signed with the Chinese Government with the full knowledge of the British Legation, it is also apparent that the existence of the 1905 compact was temporarily forgotten. Such a striking case of official amnesia is all the more extraordinary, inasmuch as it was only four years ago that the existence of the agreement was officially recalled to the attention of the American Government by the British Foreign Office, to justify the reasons why the American Group should not be permitted to participate in the Triple Hukuang Railway Loan.

The failure of the American Bankers immediately to respond to the rather superior condescension of the British official group in allotting the shares, was construed by the latter as a waiving of the American rights to participation in the Hankow-Szechuan Railway, provided for in a letter written by the Waiwupu in 1904 to the American Minister (Mr. Conger). The 1905 Agreement was then not only officially advanced by the British Government as a fair reason why America should not be admitted to the Hukuang Loan, but it is also on record that when the Agreement was first made, the British Minister at Washington officially recommended the American Government to instruct its bankers to communicate with the Chinese Central Railways, Limited, if they desired participation.

It is also on record that the 1905 Agreement was entered into with the knowledge, and presumably the approval, of the British Government, thus making the Government, beyond the shadow of a doubt, a full party to all that transpired. It is difficult to believe, however, that the British Foreign Office ever gave the matter more than a passing thought, and it is charitable to say it must totally have failed to realize all the points involved in such a transaction.

It has also been urged that the 1905 Agreement was nullified or supplemented by the terms of the Hukuang Loan Agreement, but such a contention can only blind those unacquainted with the true facts. The British Group in the Hukuang Loan, although officially represented by the Hongkong and Shanghai Banking Corporation, consists of the British and Chinese Corporation and the Chinese Central Railways, Limited.

In the distribution of the profits and participation of the British Group in this Loan the following arrangement was finally arrived at:—

Of the total loan of £6,000,000 the portion appertaining to the Hankow-Canton section is £3,000,000 and the portion appertaining to the Hankow-Szechuan section is £3,000,000.

The Chinese Central Railways, Limited, takes no participation in the Hankow-Canton section, the profits of which, whether from flotation or commission on materials, are divisible equally between the British and Chinese Corporation, Limited, the German Group, the French Group, and the American Group.

The British and Chinese Corporation, Limited, and the French Group take no participation in the Hankow-Szechuan section, the profits on which, whether from flotation or commission on materials, are divisible, two-fourths to the Chinese Central Railways, Limited, one-fourth to the German, and one-fourth to the American Groups.

For facility of division it was agreed that the portion of the loan to be floated in London, £750,000, should be deemed to be floated on account of the British and Chinese Corporation, Ltd., and £750,000 on account of the Chinese Central Railways, Ltd.

Of the portion to be floated in Paris by the Banque de l'Indo-Chine £750,000 should be deemed to be on account of the Chinese Central Railways, Ltd.

In the final arrangement for the appointment of the engineers and the purchasing agency rights for the extension of the line to Chengtu, it was arranged that the chief engineer for the first 400 kilometers was to be appointed by the American Group, for the next 600 kilometers by the British Group, and the remaining 600 kilometers by the French Group, and it was also arranged that the purchasing agency rights for the proposed extension would go with the appointment of the chief engineer.

It is thus clearly established that the Chinese Central Railways, Ltd., secured its full participation in the Hukuang Loan from the other parties. The company was honorably and justly dealt with in the division of the profits and its future participation.

Yet, when the time arrived for the combination to repay its obligation, by admitting participation in the Pukow-Sinyang section, the official British company (excepting the Chairman

of the British and Chinese Corporation, who admitted at the annual meeting in London that other nationals had the right to share in the Pukow-Sinyang railway) suffered a mental hiatus and conveniently overlooked that the French partners in the company were entitled to one half the materials and engineers, which stipulation should have been incorporated in the Loan Agreement.

But this action would have revealed the truth to the Chinese Government, which was the last thing that the official corporation desired, so the facts were concealed and the Pukow-Sinyang Loan Agreement was signed as a purely British undertaking.

The signing of this agreement under these circumstances may have appeared quite justifiable to the British official organization, as it had the support of its Government, but the fact that the rights which were wrung from China as a penalty for her signing the Peking-Hankow Loan were afterwards divided with the French, and Belgians did not seem to trouble their conscience.

THE CHINESE GOVERNMENT'S POSITION

But how about the position of the Chinese Government? Under the circumstances was not the Pukow-Sinyang Loan Agreement obtained from the Chinese Government under false pretenses?

Article 23 of the Final Agreement expressly stipulates as follows:—

"The Company may, subject to all its obligations under this agreement, transfer or delegate all or any of its rights, powers and discretions thereunder to *any British Company, Directors or Agents* with power of further transfer and sub-delegation; such transfer, sub-transfer, delegation or sub-delegation to be subject to the approval of the Director General."

Has the Chinese Government ever been officially informed of this transfer by the 1905 agreement of the British rights to French and Belgian interests? If these rights have been transferred and the status of the company changed, is the Loan Agreement valid? It may be urged that although the large majority of the shares are held in France and Belgium, that the company remains British and its status is not altered.

The American Government advanced this same argument in 1905, and furthermore, guaranteed the American character and status of the American-China Development Company, notwithstanding the fact that the Belgians had secured control of the shares by private purchases in the market. The Belgian controlling interest in the American company was never approved by the American Government, as the British Government approved the transfer of British rights in the 1905 Agreement. The attitude of the American Government at that time did not, however, satisfy the Chinese, who strongly insisted on the cancellation of the concession for this breach of the Agreement.

This view point of the Chinese had, at the time, the moral support of British interests in China, and the British press were loudest in their denunciations of the betrayal of China by the Americans. Every honest thinking American fully concurred in the Chinese attitude, and the American Government was compelled to do justice to China by permitting China to repurchase the right to the concession.

And yet, at the very time that the Hankow-Canton Redemption Loan was being signed with the Hongkong Government, and the British official institution was being made the medium for the loan, the proceeds of which were to be employed in repurchasing the concession from the Americans, the British official group, with all these facts clearly before them, were busily engaged in handing over to the French and Belgians, with the approval of its Government, the controlling interest in a purely British concession.

The date of signing the Hankow-Canton Redemption Loan is not given, but it became effective on October 6th, 1905, thus clearly indicating that it had been drawn up some time in advance. The Agreement in which the British official Group ceded its rights to the French and Belgians was signed on October 2nd, 1905, or four days before the other document became effective.

China is weak and passing through the greatest crisis in her long history. Harried and bullied on all sides by aggressive foreign interests she is struggling to maintain law and order, preserve her integrity and consolidate the authority of the President throughout the country. China is not in a position to demand justice. She cannot approach the British Government at this crisis in her affairs and request fair play. She is in the hands of the official financial institutions, and needs their assistance to tide over the crisis. She cannot antagonize these institutions just now, for they would retaliate in the money market. China can only hope for the justice that is due to her by depending upon that innate sense of fair play and equity characterestic of all true Britons. China looks to Great Britain as her best counsellor, and President Yuan holds Sir John Jordan, the British Minister at Peking, as his most cordial friend. The British position in China has been seriously undermined by the knowledge of the 1905 Agreement, and although no official remonstrance may ever be made, the advance of British interests in the future will hinge largely on the attitude assumed by the British Government in connection with the 1905 Agreement. The good name of the British Government demands some action in this matter. There is only one amende honorable. Will it be made?

THE HUKUANG RAILWAYS

The Chinese Government has concluded an arrangement with the banks of the four Powers (Great Britain, Germany, France and the United States), for the extension of the Hupeh-Szechuan Railway from Kueichowfu, viâ Chungking, to Chêngtu, involving the construction of over 500 miles of line. The financial arrangements will be equally shared by the four groups, but the French will benefit principally in the matter of construction, as no share of the construction of the system provided for by the Hukuang Agreement was allotted to them. Details have not yet been settled, but it is understood that surveying will be begun forthwith. As regards terms, the banks, of course, require a reversion to those known as the Canton-Kowloon Railway terms, by which the railway itself constitutes the security, together with the usual guarantees relating to expenditure and accountancy.

THE 1905 AGREEMENT

Agreement Between Certain British Corporations, a Group of French Capitalists and Chinese Central Railways, Limited, for the Construction of the Sinyang-Pukow and Hankow-Chengtu Railways

Memorandum of Agreement made the 2nd day of October, 1905, Between Carl Meyer of 4 and 5 King William Street in the City of London on behalf of a body of English capitalists consisting of the British and Chinese Corporation, Limited, the Pekin Syndicate, Limited, and the Yangtse Valley Company, Limited (who with their successors and assigns are hereinafter called the British Group) of the first part, Stanislas Simon, of 15 bis Rue Lafitte, Paris, in the Republic of France on behalf of a body of French capitalists consisting of the Banque de l'Indo-Chine, the Comptoir Nationale d'Escompte de Paris, the Société Générale, the Regie Générale de Chemins de Fer and Messieurs N. J. & S. Bardac (who with

their successors and assigns are hereinafter called the "French Group") of the second part and the Chinese Central Railways, Limited (hereinafter called the "Company") of the third part.

Whereas the Company was registered as a Company with limited liability under the Imperial British Companies Acts 1862 to 1900 on the 7th of January, 1904.

And whereas the said company was formed by two of the parties forming the British Group for the purpose of acquiring and dealing with concessions and other rights in connection with railways in China and elsewhere and for other purposes mentioned in the Memorandum of Association of the Company.

And whereas there have been issued to the British Group 50,000 shares of £1 each on which the sum of 8s. per share has been called and paid up.

And whereas the Company is at present entitled to the benefit of two agreements, short particulars whereof are set forth in the schedule hereto and which refer to railways proposed to be constructed from Pukou to Tientsin and from Pukou to Sinyang respectively.

And whereas the Company has been for some time past negotiating to obtain a concession and other rights in connection with a railway from the Hankow-Sinyang District to Chengtu in the Province of Szechuan and the French Group have been for some time past negotiating to obtain a concession and other rights in connection with a Railway from the Hankow-Sinyang District to Chengtu and they have thereby come into competition with each other.

And whereas for the purpose of putting an end to such competition the Company and the French Group have agreed to associate themselves together in the manner and on the terms hereinafter appearing.

And whereas *it is an essential term of the agreement that the British Group and the French Group shall so far as regards matters within the scope of the company's objects do all in their power to oppose and defeat all competition with the Company.*

Now these presents witness that **it is hereby agreed** by and between the parties hereto as follows:

1.—The capital of the Company shall be forthwith increased by the creation of 1,000 Deferred Shares of £1 each, which shall be entitled to receive between them one half the surplus profits of each year (which the Directors may determine to divide) after there shall have been paid by way of dividend or bonus to the holders other than the Deferred Shares a sum equal to the nominal amount of such shares and also to rank pari passu in any return of capital in a winding-up or otherwise until the full amount paid up on all the shares of the Company for the time being issued shall have been returned and thereafter to receive one half of any surplus assets and on the terms that each deferred share shall upon a poll confer 100 votes in respect thereof upon the holder thereof.

2.—Of the said deferred shares 550 numbered 1 to 550 inclusive shall be forthwith allotted to the British Group and the remaining 450 numbered 551 to 1,000 inclusive shall be issued to the French Group. All the shares so allotted shall be paid up in cash at once.

3.—There shall also be allotted in the proportions below mentioned to the French Group or to persons nominated by them whose pecuniary responsibility shall be undoubted the remaining 50,000 shares of the original share capital and there shall be forthwith called and paid up on each such share the sum of 8s. and all calls thereafter made on the said shares shall be paid in due course. Of the said 50,000 shares 7,500 shall be allottep to the Compagnie Internationale d'Orient or their nominess (hereinafter called the Belgian Group) and 2,500 shares out of such 7,500 shall be transferred or the benefit thereof made over to the Yangtsze Valley Company, Limited, on such terms and conditions as the British Group shall think fit. Of the 50,000 shares held by the British Group or their nominees 5,000 have already been transferred to the Belgian Group and in the event of certain American capitalists to be approved of by the British Group (hereinafter referred to as the American Group) agreeing within twelve months from the date hereof as to which time shall be of the essence of the contract to accept such participation but not a smaller one in the Company the British Group shall transfer or make over the benefit of a further 7,500 shares out of their 50,000 shares to the American Group but only upon such terms and conditions as the British Group shall think fit and in the event of the American Group not agreeing within the time aforesaid to participate as aforsaid the British Group shall transfer 2,500 out of the 7,500 shares to the French Group and shall retain the remaining 5,000 for themselves so that in the event of the American Group not participating the said 100,000 shares will be held as to 45,000 by the British Group or their nominees as to 45,000 by the French Group or their nominees and as to 10,000 by the Belgian Group or their nominees. None of the said 100,000 shares shall save as aforesaid be sold, transferred mortgaged or otherwise dealt with without the consent of the British and French Group for a period of five years from the date hereof and before the transfer of the shares aforesaid to the Belgian and American Groups agreements to the like effect to this Clause shall be entered into by them and by the Belgian Group also relating to the shares already transferred to them as aforesaid.

4.—The number of Directors of the Company shall be increased to 18, of whom 9 shall be from time to time appointed by the holders of the 550 deferred shares number 1 to 550 inclusive or of a majority of them and the remaining 9 shall be from time to time appointed by the holders of the remaining 450 deferred shares numbereed 551 to 1,000 inclusive or of a majority of them.

5.—The 9 Directors from time to time appointed by the holders of the said 550 deferred shares shall be appointed a permanent committee of the Board sitting in London and the 9 Directors from time to time appointed by the holders of the said 450 deferred shares shall be appointed a permanent committee of the Board sitting in Paris, but all resolutions of the said Committees in London and Paris shall be subject in all respects to the control of the Board of Directors of the Company and to all resolutions of the Board affirming, disaffirming or otherwise dealing with the same directly or indirectly.

6.—The Chairman of the Board and also any person temporarily appointed to preside in his absence at a meeting of the Board or of the Company shall be a natural born or naturalised British subject and be from time to time elected by the Directors appointed by the holders of the said 550 deferred shares out of the directors appointed by the holders of such shares and such Chairman or other person shall in addition to any votes he may already posess have a casting vote at such meeting of the Board and of the Company. Meetings of the Board shall be held in London or Paris as may be determined by the Board. The General Meetings of the Company shall be held in London. The Chairman of the Paris Committee shall be appointed by the members of such Committee and the Chairman of the London Committee shall be the Chairman of the Board of Directors of the Company.

7.—The French Group shall forthwith on the execution hereof vest in the Company the benefit of all negotiations entered into by or in its behalf in regard to the said concessions and rights in competition with the British Group and all surveys made in connection therewith and shall give to the company all documents and information in its possession relating thereto and the Company shall thereupon repay to the French Group such a sum as in the opinion of the Board of Directors of the Company shall represent the amouut of the expenses incurred by the French Group therein and properly attributable thereto.

8.—The Engineers and other European employees engaged upon the said railway from Pukou to Chengtu and of each railway that may be formed or controlled by the Company (other than the said railway from Pukou to Tientsin) *shall so far as possible be in equal proportions of British and French nationalities and all orders for material, rolling stock and plant and all contracts for construction of the said railways (other than aforesaid) shall be divided in equal proportions between British and French manufacturers and contractors.*

9.—It shall also be an essential term of the contract that no change shall be made in the character or political status of the Company or of any railways formed or controlled by the Company. All concessions and other like rights and privileges obtained by or for the Company shall be taken in the name of the company.

10.—All companies that may be formed by or under the auspices of the Company or in connection with any railways or other concerns in which it is interested shall be Chinese Companies. If that should appear undesirable the said companies shall be of the same character as the Company and similar provisions to these herein contained in relation to the political character and status of the Company shall apply to each company so formed.

11.—*The British and French Groups shall respectively agree that so long as they hold any shares in the Company respectively they will respectively use their best endeavors to oppose and defeat any schemes competing with the Company's main business.*

12.—The voting power of the British and French Groups and of their nominees in respect of the shares of the Company for the time being held by them or on their behalf shall be used against and shall not be used in favour of any resolutions which may tend to contravene the provisions of this present contract and the Directors of the Company shall be authorised to disregard all votes given in contravention of this clause.

13.—No shares shall be transferred out of the names of the British, French, Belgian or American Group or their nominees to any companies or

persons except upon the terms that such companies or persons shall bind themselves by the terms of this agreement and the Board shall refuse to register all transfers made in contravention of this agreement.

14.—The Articles of Association of the Company shall be altered in such manner as to give effect to the provisions of this agreement.

In witness whereof the said parties to these presents have hereunto set their hands the day and year first above written.

THE SCHEDULE ABOVE REFERRED TO:

6th January, 1899.—Preliminary Agreement of this date made between His Excellency, Sheng, Director-General of the Imperial Chinese Railway Administration, acting under the authority of the Tsung-li-Yamem of the one part, and the British firm of Jardine, Matheson & Company for themselves and on behalf of the Hongkong and Shanghai Banking Corporation, of the other part, jointly representing a British syndicate adopting the terms of the Preliminary Agreement signed by the above mentioned contracting parties on the 13th day of May, 1898, for the financing, construction and working of a railway from Shanghai to Nanking as a Preliminary Agreement for the construction and working of a railway from Pukou to Sinyang in the Provinces of Kiangsu, Nganhui and Honan.

18th of May, 1899.—An agreement of this date made between their Excellencies Hsu and Chang duly authorized to act on behalf of the Imperial Government of China of the one part and (A) The Deutsche Asiatische Bank, (B) the Hongkong and Shanghai Banking Corporation for themselves and on behalf of Messieurs Jardine, Matheson and Co. as joint Agents for the British and Chinese Corporation, Limited, thereinafter called "the Syndicate" for the provision jointly by the Deutsche Asiatische Bank and the British and Chinese Corporation of a loan and for the construction and working of a railway from Tientsin to the Yangtzekiang.

(Signed) CARL MEYER.

Witness to the signature of Carl Meyer on behalf of the British Group

WATER HENDERSON,
Sol., 31 Lombard Street, London.

(Signed) S. SIMON.

Witness to the signature of Stanislas Simon on behalf of the French Group

(Signed) THO. GILBERT.
Secretary, Chinese Central Railways.

Witness to the signature of Thomas Gilbert for and on behalf of the Gentral Chinese Railways, Limited.

WATER S. HENDERSON,
Sol., 31 Lombard Street, London.

THE PUKOW-SINYANG RAILWAY

FULL TEXT OF THE LOAN AGREEMENT

The following is the text of the Loan Agreement for the construction of a railway between Pukow and Sinyang:—

This Agreement is made at Peking on the 14th day of November 1913, corresponding to the 14th day of the 11th month of the 2nd year of the Chinese Republic, and the contracting parties are :—

The Government of the Republic of China (hereinafter called "The Chinese Government") acting through its Minister of Finance, its Minister of Communications, and the special Commissioner appointed to negotiate the present Agreement, of the one part, and Chinese Central Railways, Limited, London (hereinafter called "The Company") of the other part.

Whereas a preliminary Agreement was signed in respect to the Pukow-Sinyang Railway Loan on January 6th, 1899, corresponding to the 25th day of the 11th month of the 24th year of Kuang Hsu, it is now agreed that this final Agreement shall be substituted for,the said preliminary agreement, and this final Agreement witnesseth as follows :—

ARTICLE 1

The Chinese Government hereby authorises the Company to issue a five per cent. (5 %) Gold Loan for an amount of £3,000,000. The Loan shall be of the date on which it is issued to the public and shall be called "*The Chinese Government Five Per Cent. Pukou-Sinyang Railway Loan.*"

ARTICLE 2

The Loan is designed to provide capital for the construction of a Government line of Railway from a point on the Tientsin-Pukow Railway, Southern Section, to a point at or near Sinyang on the Peking-Hankow Railway, a distance of about three hundred and fifty miles.

The route to be followed between these two points shall be decided upon by the Director-General of the Railway after completion of the final survey.

ARTICLE 3

The capital so provided shall be solely devoted to the construction of the railway line, including the purchase of the land, rolling stock and other equipment, and to the working of the line and to payment of interest on the loan during the period of construction, which is estimated at 3 years from the actual beginning of the works, the commencement of which is not to be delayed beyond six months from the date of the signature of this Agreement, within which period the Company shall notify the Director-General that a sum not exceeding £200,000 has been placed at the disposal of the Railway Administration, to be held in Europe or remitted to China as it may direct, as a first instalment on account of the proceeds of the loan. This amount of £200,000 or whatever portion thereof is actually advanced, together with interest thereon not exceeding a charge of six per cent. (6 %) per annum, shall be deducted from the proceeds of the sale of the bonds.

ARTICLE 4

The rate of interest for the loan shall be five per cent. (5 %) per annum on the nominal principal, and shall be paid to the bond-holders half-yearly. The said interest shall be calculated from the date on which the loan is issued to the public and shall be paid by the Chinese Governmen during the time of construction either from the proceeds of the loan or from other sources, and afterwards in the first place, out of the revenues of the railway, and then from such other revenues as the Chinese Government may think fit to use for the purpose in half-yearly instalments according to the amounts specified in the schedule attached to this agreement and fourteen days before their due dates, Western Calendar, as calculated half-yearly from the date on which the loan is issued to the public.

ARTICLE 5

The term of the loan shall be forty (40) years. Repayment of principal shall commence from the eleventh year from the date of the loan and, except as provided in Article 6 hereinafter, shall be made by yearly amortisation to the Hongkong and Shanghai Banking Corporation out of the revenues of the line or such other revenues as the Chinese Government may think fit to use for the purpose according to the amounts specified in the schedule attached to this agreement, but fourteen (14) days before their due dates, Western Calendar, as calculated from the date on which the loan is issued to the public.

ARTICLE 6

If at any time after the lapse of ten (10) years from the date of the loan the Chinese Government should desire to reduce the whole outstanding amount of the loan or any part of it not yet due for repayment in accordance with the schedule of repayments hereto attached, it may do so until the twentieth (20) year, by payment of a premium of 2½ % (two and half per cent.) on the face value of the bonds, that is to say, by payment of one hundred and two pounds and ten shillings for each £100 bond, and after the 20th year without premium; but in each and every case of such extra redemption, the Chinese Government shall give six months' notice in writing to the Company and such extra redemption shall be effected by additional drawings of bonds to take place on the date of an ordinary drawing as provided for in the prospectus of the loan.

ARTICLE 7

The Hongkong and Shanghai Banking Corporation having been appointed by the Company Agents for the service of the loan the payment due for amortisation and interest, referred to in Articles 4 and 5, shall be made in accordance with the amounts of the schedule attached to this Agreement and fourteen days before their due dates. These payments shall be made by the Director-General to the Hongkong and Shanghai Banking Corporation in Shanghai in Shanghai sycee and/or coin of the national currency, as soon as the said currency shall have been effectively established, sufficient to meet such payments in Gold in London, exchange for which shall be settled with the Bank either on the date of payment or at the option of the Railway Administration at any date or dates within six months previous to any due date for the repayment of interest and principal. These payments may, however, be made in Gold fourteen days before their due, dates if the Chinese Government should happen to have

gold funds "bonafide" at their disposal in Europe not remitted from China for the purpose, and desire so to use them.

In reimbursement of expenses connected with the payment of the interest and repayment of principal of the loan, the Hongkong and Shanghai Banking Corporation will receive a commission of one quarter per cent. on the annual loan service.

ARTICLE 8

The Chinese Government hereby unconditionally guarantees that the interest and principal of this loan shall duly be paid in full, and should the revenues of the railway and/or the proceeds of the loan not be sufficient to provide for due and full payment of interest and repayment of principal, the Chinese Government will make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the Hongkong and Shanghai Banking Corporation on the date upon which funds are required, to complete full payment of interest and repayment of principal.

ARTICLE 9

The loan shall be secured by mortgage of the railway declared to be now entered into in equity by virtue of this agreement, and shall, as soon as possible hereafter be secured by a specific and legal first mortgage in favour of the Company upon all lands, materials, rolling stock, buildings property and premises of every description purchased or to be purchased for the railway, and on the railway itself, as and when constructed, and on the revenues of all descriptions derivable therefrom.

The provisions of this Article in respect of the mortgage are to be construed and treated as equivalent in purport and effect to a mortgage customarily executed in England.

ARTICLE 10

The Company is hereby authorised to issue to the subscribers to the loan bonds for the total amount of the loan for such amounts as may appear advisable to the Company. The form of the bonds shall be settled by the Company in consultation with the Director-General or the Chinese Minister in London. The bonds shall be printed or engraved in Chinese and English; they shall bear the facsimile of the signature of the Director-General and of his seal of office, in order to dispense with the necessity of signing them all in person. But the Chinese Minister in London shall previous to the issue of any bonds, put his seal upon each bond with a facsimile of his signature, as a proof that the issue and sale of the bonds are duly authorised by, and binding upon, the Chinese Government, and the representative of the Company in London shall countersign the bonds as agents for the issue of the loan.

In the event of bonds issued for this loan being lost, stolen or destroyed, the Company shall immediately notify the Director-General and the Chinese Minister in London, who shall authorise the Company to insert an advertisement in the public newspapers notifying that payment of the same has been stopped and to take such other steps as may appear advisable or necessary according to the laws and customs of the country concerned, and should such bonds not be recovered after a lapse of time to be fixed by the Company, the Director-General or the Chinese Minister in London shall seal and execute duplicate bonds for a like amount and hand them to the Company, by whom all expenses in connection therewith shall be defrayed

ARTICLE 11

All bonds and coupons and payments of interest and repayments of principal in connection with the service of the loan shall be exempt from all Chinese taxes and imposts during the currency of this loan.

ARTICLE 12

All details necessary for the prospectus and connected with the payment of interest and repayment of the principal of this loan, not herein explicitly provided for shall be left to the arrangement of the Company in consultation with the Chinese Minister in London. The Company is hereby authorised to issue through its Agents the Hongkong and Shanghai Banking Corporation the prospectus of the loan as soon as possible after the signing of this agreement (subject to the provision stated in Article 13 below by several series) and the Chinese Government will instruct the Chinese Minister in London to co-operate with the Company in any matters requiring conjoint action and to sign the prospectus of the loan.

ARTICLE 13

The loan shall be issued to the public in two or more series of bonds to the amount of three million pounds sterling (£3,000,000) as soon as possible after the signature of this agreement, subject always to the engagement of the Chinese Government under Article 13 of the Chinese Government Reorganisation Gold Loan of April 26, 1913.

The price of the bonds to the Chinese Government shall be the actual price of issue to the public in London less flotation charges of five and a half points (5½) retainable by the company (that is to say a charge of Five Pounds Ten Shillings (£5.10/—) for every £100 bond issued).

ARTICLE 14

The proceeds of the loan shall be paid to the credit of a Pukou-Sinyang Railway Account with the Hongkong and Shanghai Banking Corporation in London. Payments of loan proceeds into the credit of this account shall be made in instalments and on dates conforming to the conditions allowed to the subscribers to the loan. Interest at the rate of three (3) per cent. per annum shall be granted on the credit balance of the portion of this account kept in London and interest on the credit balance of the portion transferred to China will be allowed at the Bank's usual rates for such accounts. After deduction of the funds required for the service of interest and for commission on this service during the time of construction, the Bank will hold the net proceeds with accrued interest to the order of the Director-General who in authorising the payment of any sums exceeding £20,000 shall give notice to the Hongkong and Shanghai Banking Corporation ten days before the day on which they are required. Requisitions on the loan funds will be drawn in amounts to suit the progress of construction of the railway by orders on the Hongkong and Shanghai Banking Corporation signed by the Managing Director or his duly authorised representative and the Chief Accountant, and accompanied by a certificate stating the nature and cost of the work to be paid for.

Funds to meet monthly estimates of construction expenses shall be transferred to Shanghai as and when required by order of the Director-General, such transfers being effected through the Hongkong and Shanghai Banking Corporation, and the transferred funds shall remain on deposit with this Bank until required for railway purposes.

The accounts of the railway will be kept in Chinese and English, in accordance with the accepted modern methods, under the direction of a duly qualified British Chief Accountant to be chosen and appointed by the Director-General with the previous consent of the Company. The terms of his agreement will be fixed by the Director-General. The Chief Accountant will draw up a list of the necessary staff for his Department for submission to the Director-General, who shall decide and make the appointments, and the Chief Accountant shall have sole charge under the authority of the Director-General and/or the Managing Director or his Representative of all disbursements and receipts of railway funds during the currency of this loan, and shall sign, in conjunction with the Managing Director, all documents appertaining to the disbursements of railway funds. The Railway Administration will publish annually upon the close of its financial year a report in the English and Chinese languages showing the working accounts and traffic receipts of the railway, which report shall be procurable by the public on application.

ARTICLE 15

If during the time of construction the net proceeds of the present loan with accrued interest should, after deduction of the sums necessary for the service of interest on the loan, not be sufficient to complete the construction and equipment of the railway line, the amount of deficiency shall be provided, in the first place, from such Chinese funds as may be available so as to permit of the uninterrupted continuance of the work of construction, any balance then uncovered being supplemented by a further foreign loan for the amount required, to be issued by the Company. The interest and other conditions of such supplementary loan to be the same as in the present agreement.

If after the completion of the line there should be a balance at credit of the railway account, such unused balance will be transferred to the credit of the interest reserve fund hereinafter mentioned in Article 17 as a provision for payments for which the Chinese Government is responsible under this agreement.

ARTICLE 16

The construction and control of the railway shall be vested entirely in the Chinese Government. The Chinese Government will appoint a Director-General of the Railway, who will reside in the immediate neighbourhood of the line, and have full power to act in the name and on behalf of the Government within the terms of the present agreement. The Engineer-in-Chief who will be chosen and appointed by the Director-General with the previous consent of the Company, shall be a duly qualified British Engineer and shall take orders from the Director-General, the Managing Director or his duly authorised representative. The terms of his agreement will be fixed by the Director-General. His duties will be to make the survey, draw up the plans of the line and make estimates, to direct the execution of the works and to order under the authority of the Director-General, the Managing Director or his duly authorised representative, all the materials and equipment necessary for the exploitation of the

railway. He will draw up a list of the necessary Chinese and foreign Engineering Staff for submission to the Director-General, and the latter shall appoint and send them to the Engineer-in-Chief, who shall then assign works to them. Whenever appointments of technical employés, both Chinese and foreign, are to be made or their functions defined, as well as in the case of their dismissal, the Engineer-in-Chief shall be empowered to take the necessary action by the Director-General, the Managing Director or his representative.

As and when any section of the line is constructed and ready for traffic it will be handed over by the Engineer-in-Chief to the Director General, who will, as far as circumstances permit, open such section to traffic, and will select a duly qualified British Traffic Manager, who will be charged with the operation of the railway under the order of the Director-General and/or the Managing Director or his Representative.

When the work of construction is entirely completed the service of the Engineer-in-Chief will terminate and the Director General will select a duly qualified British Engineer for the maintenance of the railway under the orders of the Director General and/or the Managing Director or his representative.

The two officers above referred to shall be appointed by the Director-General with the previous consent of the Company, and the Director-General shall fix the terms of their agreements.

ARTICLE 17

All receipts and earnings of the railway shall be regularly paid into the Railway's account with the Hongkong and Shanghai Banking Corporation, interest on such funds being allowed by the Bank at rates to be arranged for current account or fixed deposit as the case may be.

All expenses of working and maintaining the line shall be paid from the receipts and earnings, and any remainder thereof shall be charged with the service of the loan. If, after payment of these expenses, and making due provision for payment of interest on the bonds, and for repayments of principal due in accordance with the amortisation schedule hereto attached, there remain surplus funds unappropriated and properly available for other purposes, such funds shall be at the disposal of the Chinese Government to be used in such manner as the Director-General may decide, provided always that after completion and opening of the line to traffic the amount sufficient for regular payments of interest and repayment of principal shall be deducted from such surplus funds, if any, and shall be deposited with the Hongkong and Shanghai Banking Corporation six months before the date on which such payments fall due.

In the event of there being no surplus funds available as aforesaid from the earnings of the railway the amount required for payments of interest and repayments of principal shall be provided in accordance with the conditions of Article 8 hereinbefore.

ARTICLE 18

The Company will act as Agents of the Railway Administration during construction for the purchase of all materials, plant and goods required to be imported from abroad. For all important purchase of such materials tenders shall be called for by the Director-General; in the case of all tenders indents and orders for the importation of goods and materials from abroad, the said Agents shall purchase the materials required on the terms most advantageous to the railway, and shall charge the original net cost of the same, plus a commission of five per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without the approval of the Director-General, to whom the Engineer-in-Chief shall apply for sanction.

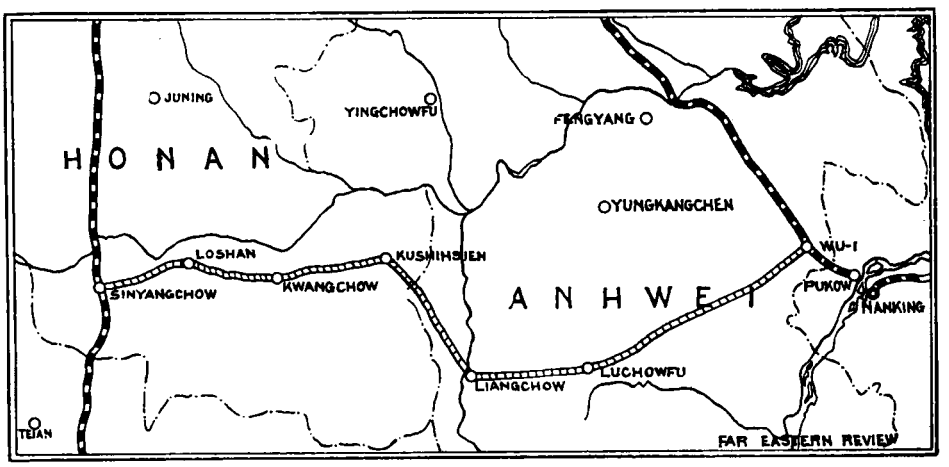
In return for payment of commission as above stated the Company shall be prepared to superintend the purchase of all foreign materials required for the construction and equipment of the railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality, and that the Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of British manufacture shall be given preference over other goods of foreign origin.

Original invoices and inspectors' certificates are to be submitted to the Railway Administration; all return commissions and rebates of every description shall be credited to the railway, and all purchases made by the Agents, on behalf of the Railway, shall be supported by manufacturers' original invoices and inspector's certificates.

No commission shall be paid to the Agents except as above provided, but it is understood that the Railway Administration shall provide out of railway funds for the remuneration of Consulting Engineers, whenever their services are engaged.

With a view to the encouragement of Chinese industries preference will be given, at equal prices and qualities, over British or other foreign goods, to Chinese materials and goods manufactured in China. No commission will be paid to the Company on purchases fo such materials and goods.

It is understood and agreed that after completion of construction of the railway the Company will be given the preference for such agency business, during the currency of the loan, for the supply of foreign materials as the Railway Administration may require, on terms to be hereafter mutually agreed upon.



ROUTE OF THE PUKOW-SINYANG RAILWAY.—In a map published in our November issue we inadvertently showed the route running due north from Liuanchow to Chengyangkwan. This map shows the real route.

ARTICLE 19

Branch lines or extensions in connection with the railway line mentioned in this agreement that may appear to the Chinese Government profitable or necessary later on shall be built by the Chinese Government with funds at their disposal from Chinese sources, and, if foreign capital is required, preference will be given to the Company. The length of such branch lines or extensions, shall be determined by the Chinese Government.

ARTICLE 20

The Company is hereby appointed Trustees for the bondholders, and in any future negotiations respecting this loan or matters arising in connection therewith, which may take place between the Railway Administration and the Company, the latter shall be taken as representing the bondholders and as empowered to act on their behalf.

ARTICLE 21

If, after the signature of this agreement and before the publication of the prospectus for the issue of the loan, any political or financial crisis should take place by which the market and the prices of existing Chinese Government stocks are so affected, as to render, in the opinion of the Company, the successful issue of the loan impossible on the terms herein named, the Company shall be granted a reasonable extension of time to be mutually agreed upon for the performance of their contract. If within the time limit then determined the loan shall not have been

issued, then this contract shall become null and void, and any advances made by the Company under the provision of Article a of this Agreement shall be repaid by the Chinese Government with accrued interest, but without any other compensation or remuneration whatsoever.

ARTICLE 22

By the preliminary agreement dated January 6th, 1890, it was stipulated that the terms and conditions of the present agreement should be subject to the terms and conditions contained in the final agreement for the Shanghai-Nanking Railway.

Article 12 of the said final agreement for the Shanghai-Nanking Railway provides for the participation by the lenders in the net profits of the railway after certain charges have been met, to the extent of 20 %, and net profit certificates were issued to the lenders to the amount of 20 % of the nominal capital of the loan.

It is hereby mutually agreed that in consideration of the Company waiving its rights under the aforesaid preliminary agreement it shall be granted the right to retain, in commutation of this participation in net profits £120,000 out of the proceeds of the loan in instalments and on dates in proportion to, and based on, the terms of subscription to the loan, as stated in the prospectus. No further payment in respect of commutation of profits will be allowed on any supplementary loans.

ARTICLE 23

The Company may, subject to all its obligations under this agreement transfer or delegate all or any of its rights, powers and discretions thereunder to any British Company Directors or Agents with power of further transfer and sub-delegation; such transfer, sub-transfer, delegation or sub-delegation to be subject to the approval of the Director-General.

ARTICLE 24

This loan is contracted after having been passed by the National Assembly under the authority of a Presidential order, dated the 14th day of November 1913, Western Calendar, which has been officially communicated to the Minister of Great Britain, in Peking, by the Waichiaopu.

ARTICLE 25

Four sets of this Agreement are executed in Chinese and English, three sets to be retained by the Chinese Government and one set by the Company.

In the event of any doubt arising regarding the interpretation of the contract the English text shall rule.

Signed at Peking by the contracting parties this 14th day of the eleventh month of the 2nd year of the Chinese Republic, corresponding to the fourteenth day of November, 1913, Western Calendar.

Signed by

HSIUNG HSI-LING, Minister of Finance.
(Seal)

CHOW TZE-CHI, Minister of Communications.
(Seal)

SHEN YUN-PEI,
For Chinese Central Railways Limited.
S. F. MAYERS.

THE ACTIVITIES OF THE PEKING SYNDICATE

The following is in reference to the report of the Pekin Syndicate:—

It is some 16 years since the Peking Syndicate was formed with concessions over great areas of rich mineral lands in Shansi and Honan, and another annual report shows that the undertaking is still in what is known as the development stage. The high hopes formed at the inception of the enterprise under influential auspices have been deferred again and again by adverse circumstances, not the least of which has been the attitude of the provincial authorities, culminating about six years ago in the retrocession of the Shansi concession.

MR. LAO CHIU CHANG, Managing Director of the Pukow-Sinyang Railway.

So far the main business of the directors has been the development of the coalfield in Honan, and up to June 30, 1913, the date of the balance-sheet now issued, a net sum of £600,000 had been expended on this property, after deducting the receipts from the sales of coal. In their report this year the directors explain briefly the original plans of the former board for the establishment of the Ja-mei-sen Mines and indicate how the completion of this program has been delayed by unavoidable circumstances. Not least among these adverse circumstances have been the two separate inbursts of water during the financial year under review. In October, 1912, there was an inburst which was estimated to be at the rate of 100,000 gallons an hour and which reduced the output from two of the pits by 1,000 tons a day. In April this year there was an even greater inburst, entirely independent of the other, and the output from the part of the colliery affected by this second influx was reduced by 500 tons. However, the year's total output of 402,451 tons from the whole colliery was only 67,687 tons less than that for the preceding year so that is obvious that but for the inbursts of water the total production of coal would have shown a substantial increase.

Dwindling Cost of Development

Besides diminishing the output, this latest water trouble has, of course, retarded development and necessitates the installation of additional pumping plant. The year's expenditure on the coalfields, after deducting the proceeds of the sales of coal, amounted to £27,036. This compares with £52,222 for the preceding year. The directors state that if some £15,000 had not been spent on the unwatering of the pits the item would have been reduced still further to about £12,000, and they deduce from this the conclusion that but for the inbursts of water the development stage at the Ja-mei-sen Mines would already have been completed. As regards the time when this happy consummation will now be reached the report goes no farther than to say that "when the development equipment of No. 3 pit is completed and No. 1 pit is in working order, the capital account at Ja-mei-sen Colliery may be closed and the revenue account opened."

As to the syndicate's railway interests, the report points out that the Chinese Central Railway Company, in which the syndicate has an interest of about one-fifth, has recently resumed its former activities, and has already obtained the concession of the Sinyang-Pukow Railway against a loan of three millions sterling. The directors express the hope that the industrial era that appears to be rising in China will secure a considerable profit on portion of the syndicate's capital invested in this company.

New Bank's Big Contract

An important extension of the syndicate's operations has been its recent participation in the establishment of the Banque Industrielle de Chine, by means of which the directors hope to achieve a better apportionment of the syndicate's capital between banking, mining, and railway interests. Moreover the close connection of this British company with a French Bank whose chief shareholder is the Chinese Government should create a system of co-operation and profit sharing between the capitalists of both countries and the Chinese officials, and should prove advantageous to all three parties. The manner in which the syndicate has raised the funds to subscribe for its holding of 1,000 Founders' shares and 15,350 Ordinary shares is not indicated, the bank being established a few days after the date to which the Peking Syndicate accounts are made up. An important example of the class of transaction into which the new bank is entering is given in the report. The Chinese authorities have recently decided to establish a thoroughly-equipped up-to-date port at Pukow, adjoining which the syndicate has extensive lands. The works are to be entrusted to the new bank, a contract having been signed between the bank and the Chinese Government for a loan of £6,000,000, out of the proceeds of which the works will be first taken in hand. These works will naturally increase the value of the syndicate's land in the vicinity.

For its current revenue the syndicate relies mainly on the income from its holding of £800,000 of the Chinese Government Honan Railway Five per Cent. Gold Loan of 1905. After adding sundry revenue and deducting administration expenditure there is a balance of £17,815 for the year, against £28,168 for the preceding year. The balance again goes to swell the accumulated credit balance of the profit and loss account, which now amounts to £458,258. But the principal change in the balance-sheet is the appearance among the liabilities of a loan of £150,000 from bankers against securities. On the assets side the proceeds of this loan are represented mainly by increases of £55,000 in "investments" and £78,000 in "shares in other companies and syndicate participations;" these two items amounting at June 30 to £218,857 and £98,604 respectively. The cash balances, too, at £76,853, are about £28,000 larger than last year, but £17,000 of the increase is attributable to a decrease of that amount in the stocks of coal. The principal other items on the assets side consist of £733,511 in respect of the Government bonds; the £600,000 of coalfield expenditure, to which we have already referred; £133,732 representing the amount apportioned to the Honan concession; and £42,108 for the syndicate's steam collier.

Share Quotation Anomaly

The issued capital has remained, of course at £1,242,822 in three classes of shares. The market quotations for the Ordinary and Shansi shares are still strangely at variance with their comparative intrinsic values. In 1910 the rights of the different shares with regard to dividends and capital were definitely determined and by examining the effect of the somewhat complicated regulations then laid down it is possible clearly to bring out the remarkable discrepancy. The effect of these regulations is that by the distribution of the first £88,666 of profit the Shansi shares would receive 9¾d. per share, while the Ordinary would receive 2s. per share. The next £2,098,282 of profit distributed would give 10s. 2¼d. per Shansi share and £1 3s. 8d. per Ordinary share, and each succeeding £100,000 10d. per Shansi share and 1s. 3d. per Ordinary share. It is obvious from this that the dividend per Ordinary share will throughout be substantially greater than that per Shansi share. Yet the Ordinary shares are quoted at ⅛, and the Shansi at 1½. In the course of the various wide fluctuations that have occurred in the shares the discrepancy lessens from time to time, but at present it is remarkably large. The only explanation that can be adduced is the fact that the Shansi shares are more closely held and are therefore less liable to acute depression, such as the recent political condition of China has caused in the Ordinary shares.

It is obvious that the shareholders will still have to wait some years before they receive what can be regarded as an adequate return on their capital after the long period without dividends. The directors express confidence that the syndicate's policy will sooner or later produce a large and steady profit on the capital. How soon this desirable stage is reached depends, among other things, on the attitude of the Chinese authorities, and the report is quite reassuring in this respect. It states that even before the establishment of the Banque Industrielle de Chine, which has made the former connection closer, the syndicate has had many reasons to be satisfied with the friendly attitude of the Chinese officials regarding its Honan properties, while, quite recently, encroachments by some of the Honan people on the company's area have been prevented by order of the authorities.

FAR EASTERN RAILWAYS

CHINA

Kaohsien Mining Railway.—The Ministry of Finance has issued a notice offering the Kaohsien Mining Railway at Fangshan, near Liuliho, Chihli, for sale. The buildings and all property pertaining to the line are included in the deal. The minimum price named is Tls. 2,400,000. The money is to be paid in twelve annual instalments, but the purchaser must pay one-fourth of the whole sum during the first year. The notice specifies that only Chinese citizens may send in applications, and that no foreign capital will be admitted. A Peking paper announced towards the end of January that Mr. Yuan Chung-chih, former expectant Taotai of Chihli, has taken over the Line from the Government. This railway has been sold to a Company of which Mr. Yuan is the head.

Prospective New Railways.—The Ministry of Communications, reports a Peking paper, has been planning to extend the railway from Peking to Jehol and from Jehol to Chihfeng through Shunyi. The length of the extension is more than 700 *li*. After the Changsui line has been completed, the railway from Chihfeng to Dolonor and Chaoyang will be built. The whole line is about 1,400 *li* long. Another line from Kalgan to Urga, about 2,400 *li* long, will also be constructed.

Peking-Hankow Line.—The main station of the Peking railway at Hankow is likely to be moved from its present position behind the French Concession, though no definite decision on the matter has yet been reached, says the *Central China Post*. Another scheme that has been considered is the building of a big terminal at Kilometre Ten, with up-to-date apparatus for the transference of cargo from the trains to shipping in the river and *vice versa*. Such a terminal would be almost indispensable for the transhipment of goods from the Peking line to the Canton line, when the latter is opened.

The New German Lines.—The Tsingtao correspondent of the *North-China Daily News* wrote on January 13:—The recent agreements with the Chinese Government, whereby the railway line to Ichowfu and beyond is to be built from Taingtao, is of great importance to Tsingtao. An outlet in this direction to reach the south-western part of the province, and develop its possibilities for both imports and exports, has been for years a crying need. In this respect it does not seem of less importance than the main line to Tsinanfu, the capital. One has always felt that it was a misfortune for Tsingtao commercially, that the previous concession for building this railway was transferred to the Chinese in exchange for the privilege of building the northern end of the Tientsin-Pukow railway. This very important region has consequently been left for many years now, with very little development, whereas it might have been by this time a very important and efficient feeder of this port.

The line from Tsinanfu west, connecting with the Peking-Hankow railway will of course be important, and a good business venture for the promoters, but whether it will greatly benefit Tsingtao is perhaps questionable. The great natural advantages of the port are, however, certain to give it a good share of the general benefits of railway development.

Anking Chengyankwan Line.—The following is from the *Peking Daily News*:—The project of building a railway from Anking to Chengyangkwan was initiated during April, 1913, by Kuan Peng, a person who was involved in the Kiangsi rebellion last year. At the moment of inception, the scheme was criticised by the press as being impractical. Subsequent developments raised the suspicion that the promoters were trying to make use of the railway for an improper purpose.

The Ministry of Communications has received another petition regarding this railway from the Chengyangkwan Chamber of Commerce. In replying to this petition, the Ministry objected to the building of this line, on the ground that it interfered with the Pukow-Singyang Railway. As the Chamber of Commerce alluded to the flotation of a foreign loan, the Ministry pointed out that business men were not allowed to borrow foreign capital to build railways. The Tutuh of Anhui has been asked by a despatch to prohibit the exploitation of illegitimate profit by utilizing the name of this project.

Ningpo-Hangchowfu Line.—A correspondent wrote from Shaohingfu on January 19 as follows:—The Railway from Ningpo to Hangchowfu—the provincial Capital—is not yet finished by a long way. The Ningpo side is more enterprising and energetic in carrying out their contracts than this Shaohing side. The road is brought from Ningpo to near a large market town called Pah-kuan, at which place they will have to erect a Bridge across the Dzao-ngo River, a river which runs parallel with the Tsien-t'ang river, and both of which enter the Hangchow Bay, and both of which are affected by the tidal-wave which comes up from that Bay. Both rivers will have to be crossed by railway bridges, as the line is to run from Ningpo to Hangchow direct, thence to Shanghai, and, perhaps, they will eventually make on the line to run up the Tsien-t'ang on to Chuchowfu, and on to Yuohshan, and to connect with the Fuchow and Canton Railway. I can get no definite information re the opening of the railway from this to the native port of Si-shing, and over the river to Hangchow City. To-day we hear one talking and laying it down in good order and in great assurance that the opening and finishing of the long looked for railroad is not far off! The next day, the very opposite view is stated by another and with great confidence also.

Ichang-Szechuan Line.—Writing from Ichang on January 16 a correspondent says:—It is reported here that arrangements have now been made for the resumption of work on the Hankow-Szechuan Railway. It may be remembered that the section from here to Wanhsien had been started by the Szechuan Railway Co., and good work was put in for about a couple of years. Then the revolution came along, and it had all to be stopped, and since that things have been going to wreck and ruin, through exposure and the want of care. Some months ago a band of American engineers arrived to undertake fresh surveys and make an estimate of the cost of what had been already done. This must have been accomplished satisfactorily, and if it is true, as reported, that work on the construction of the line is to be resumed after the Chinese New Year, it will make this a busy port, as there will be lots of railway material to be transported here for use in the building of the line.

The German engineers are still surveying the Hankow-Ichang section of the same line, and things must now be quiet since that untoward incident that happened at Pan Yue San.

Railways for Fukien.—Admiral Liu Kuanhsiung has petitioned the President Yuan Shih-kai for the provision of Railways in Fukien. It the course of the petition he says:—"Upon investigation we have found that sometime ago the Fukien merchants collected shares for the construction of a line from Amoy to Changchow as an experiment. However the financial strength of the merchants failed and the construction was stopped before the line was completed. It has been recently reported that the said Company has requested the Government to buy the line. The proposal of the said Company to yield to Government ownership is indeed a wise and liberal step. This trunk line will effect a connection with three other lines, namely, Kuangtung, Chekiang and Kiangsi; and an estimate of its length is no less than two or three thousand *li*. Not to mention the difficulties in connection with the raising of funds among the merchants, the policy of the Government ownership, which has been decided upon, will not allow the people to construct railways along with the Government's. If for the construction of this line, additional taxes be levied on the people, it would no doubt incur their hatred before anything can be achieved. Surely this will not be done by our Government. We have arrived at the conclusion that the only means for to-day is to borrow money for the construction, and pledge the line as security. As Fukien is situated in a very secluded place, there are only one or two Powers who cherish any aggressive design regarding it, and the rest of the Powers have always been friendly. We can negotiate with the friendly Powers for a loan. In view of the undeveloped condition of the province and the poverty of its inhabitants, when nine out of the ten families are destitute of means of livelihood, and the officials stand helpless, the only salvation of the province is the construction of railways, on which will the life and death of the province depend. If the Government should hesitate to launch the plan, it would be useless to regret in the future. Furthermore this line is of very great importance to both Fukien and other neighbouring provinces. If it be immediately divided into sections and the work be started at once, it is but within our expectation that industry will be greatly developed, and the bad characters will be reduced. Thus all troubles both internal and external may be averted. The benefit will not only be reaped by this part alone in the South. With regard to the regulations for the conclusion of loans and the construction of the railway, it is requested that the Ministries concerned will be instructed to formulate them."

Kiukiang-Nanchang Railway.—A correspondent writing from Kiukiang on December 27 said:—The task of completing the Nan-Hsun (Nanchang-Kiukiang) Railway is being pushed on steadily, though hardly energetically. Quite recently a large quantity of bridging material was landed, which no doubt in the fulness of time will find its way to T'eian, where it is badly needed. Two new locomotives, built by the American Locomotive Co., have also been acquired, while the lately erected brick engine shed is now ready for occupation. Optimists expect that through traffic to Nanchang will be instituted by the spring. "'Tis a consummation devoutly to be wished." In the meantime it is worth noting that a representative of the Railway is now in Peking endeavouring, if report be true, to induce the General Government to take over the enterprise, presumably not as a gift. Funds evidently are scarce, for the Nanchang authorities are now levying a railway (!) tax on native goods *carried by junk* from there to Kiukiang.

Shanghai-Hangchow Railways.—The Board of Communications from January 1 assumed control of the Kiangsu section of the Shanghai-Hangchow Railway, and this control is vested in Mr. Chung Mun-yew, Managing Director

of the Shanghai-Nanking Railway. The Shanghai-Hangchow Railway has been the subject of contentions, and was once a large factor in the struggle between Peking and the provinces for power. The local authorities strenuously objected to its being under the control of the capital, and ultimately the line came under the management of two bodies of shereholders, the Kiangsu and Chêkiang shareholders, to all intents and purposes two companies. The Kiangsu company has now gone into liquidation, and as a consequence the Government has taken over its section of the railway.

For a long time schemes have been afoot for the linking up of the Shanghai-Nanking and Shanghai-Hangchow Railways. The original intention was to build a line from Soochow to a place like Kashing, but nothing ever came of it. It is believed that fresh negotiations for linking up have been started, but for the time being the proposals are much less ambitious, a line from one of the stations near Shanghai, such as Chenju, Nansiang or Anting, being suggested to meet the Hangchow railway some distance past Lunghua. The situation is, however, still complicated by the opposition of the Chekiang shareholders to any suggestion of control by the Central Government over their part of the line. In Kiangsu the railway runs for a distance of only about thirty miles, by far the greater proportion being in the neighbouring province, and it is feared that negotiations cannot be satisfactorily carried through, until the objections from Chekiang have been overcome.

After the section of the railway from Shanghai to Hangchow was completed the scheme was to carry the line through to Ningpo. Work upon this section was started a considerable time ago, but up to the present all that has been accomplished is about forty miles open to traffic from the Ningpo end.

Projects.—It is reported that the French are pressing for the Yunnanfu-Chengtu railway concession with a view to linking up the railway from Tatung (Shansi) to Chengtu and the Hanoi-Yunnan system. This would give Franco-Belgian interests a valuable strategic connection across China between Kalgan and Hanoi. These lines would cross at Sianfu the Franco-Belgian railway from Lanchowfu to the coast. This last line is to terminate at Haimenting at the mouth of the Yangtse, the original terminus, Haichow, having proved unsuitable.

Since this was written the French have obtained an option on the Yunnanfu-Chungking railway.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended December 13 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1913....	52,418	11,981	64,399
1912....	41,608	9,758	51,366
Increase.	10,810	2,223	13,033
Decrease	—	—	—

For forty-nine weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	2,326,468	504,344	2,830,812
1912....	2,149,199	396,656	2,545,855
Increase.	177,269	107,688	284,957
Decrease	—	—	—

Week ended December 20.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1913....	50,224	11,899	62,123
1912....	38,576	8,200	46,767
Increase	11,657	3,699	15,356
Decrease	—	—	—

For fifty weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1913....	2,376,692	516,243	2,892,935
1912....	2,187,766	404,856	2,592,622
Increase.	188,926	111,387	300,313
Decrease	—	—	—

Week ended January 3, 1914.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1914....	55,253	8,703	63,956
1913....	48,266	9,486	57,752
Increase.	6,987	—	6,204
Decrease	—	783	—

For twenty-six* weeks, 1913

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1914....	1,239,378	261,437	1,500,815
1912....	1,060,539	248,483	1,309,022
Increase.	178,839	12,954	191,093
Decrease	—	—	—

* Owing to the alteration in the railway's fiscal year the totals to date have been altered to include figures as from July 1, 1913 only.

Week ended January 10.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1914....	55,796	11,147	66,943
1913....	49,479	10,531	60,010
Increase.	6,317	616	6,033
Decrease	—	—	—

For twenty-eight weeks.

Year.	Passengers.	Goods and Sundries	Total
1914....	1,295,174	272,584	1,567,758
1913....	1,110,018	259,014	1,369,032
Increase.	185,156	13,570	198,726
Decrease	—	—	—

Week ended January 17.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	58,059	12,566	70,625
1913....	45,907	9,557	55,464
Increase.	12,152	3,009	15,161
Decrease.	—	—	—

For twenty-nine weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	1,353,233	285,150	1,638,383
1913....	1,155,925	268,571	1,424,496
Increase	197,308	16,579	213,887
Decrease	—	—	—

MANCHURIA

South Manchuria Railway Co.—It is said that in the programme of readjustments of the South Manchuria Railway Company an item is included to raise a foreign loan next spring to the amount of about 20,000,000 *yen*. A portion of the proceeds of the loan will meet the expenditure for the construction of the Szuping-chieh-Tao-nan-fu line and the remainder will cover the expenditures for the completion of the remaining section of the Kirin-Changchun line and for the surveying work of the Kirin-Hui-ning line. These railway works, however, will be started as several years' continuing undertakings and only a part of the loan will be expended in the first year of those railway undertakings. The remaining sum of the loan, therefore, will be deposited in the National Treasury and it will be diverted for the railway funds required in Japan proper in case of urgent need.

The monthly traffic returns for December last of the S. M. Railway reached Y.2,806,846, being an increase by Y.241,912 on the corresponding month of the present year. The daily average for that month amounted to Y.90,543.

The aggregate traffic receipts since last April were Y.10,075,110, being an increase by Y.3,206,618 over the corresponding period of the previous year.

The *Manchuria Daily News* understands that the S. M. Railway management proposes to increase the passenger service on the Main Line between Dairen and Changchun by a daily through service by the end of the fiscal year 1914, viz., March 31st, 1915. At the same time the capacity of carrying freight is to be raised to the maximum capacity of 8,730 tons per day each way, and the average running mileage of coal trains to 90 miles a day.

The Railway Workshops at Shahokou are going to construct the first locomotives for the S. M. Railway upon materials ordered from England which are arriving at Dairen. Six locomotives will be completed by about next July, each costing about Y36,000, as against Y46,000 for one of English make and Y42,000 for one of American make. As the workmen acquire greater skill in this new line of work, the Workshops management expects to be able to reduce the expense of constructing a locomotive to only about 30 per cent. of the original cost.

The Workshops supplied the whole of materials for the two steel-trussed warehouses for erection at Antung, which cost about Y170,000.

South Manchuria Railway Feeders.—The Chinese gentry of Tiehling, represented by the chairmen of the Prefectural Assembly, the Chinese Guild, and the Town Council, have started a movement to have the western terminus of the proposed railway connecting Hailungcheng with the S. M. Railway shifted from Kaiyuan to Tiehling. It may be remembered that the need of constructing this railway line has been aired since 1909, and the question of the terminal station has remained a matter of bitter rivalry between Tiehling and Kaiyuan. With the recent revival of the railway scheme endorsed by the alleged Sino-Japanese Railway Loan agreement, the leading Chinese merchants of Tiehling have regarded with alarm the possibility of losing the terminal station in project to Kaiyuan.

The Japanese Government is pushing on negotiations for the settlement of minor details in connexion with the concession for the construction of five railways in Manchuria and Mongolia, says the *Asahi*, with a view to starting without delay the work of construction, for which preparations are being made. The other party to the negotiations being the Chinese Government, adds the Osaka journal, the negotiations may not progress so rapidly as is desired by the Japanese Government; but the general arrangements are already made, and the English loan for the Paosing Railway has been signed. In these circumstances, not much difficulty is likely to be experienced in advancing Sino-Japanese negotiations. The construction of railways in Manchuria and Mongolia in winter is difficult, so the Government proposes to start work early next spring. The Taonanfu line will be first constructed to connect Chengchiatun with the South Manchuria Railway, the construction of other lines being taken in hand gradually.

According to the Chinese papers, the Japanese Government has proposed to the Government that two of the four lines conceded to Japan should be changed to run through some of the cities just opened to foreign trade by a Presidential Order, instead of passing through the cities as formerly decided upon. One of the two lines is the Changchun-Taonanfu Railway, which, according to the proposal, is to be started from Tienchiatun in Manchuria, passing through Chihfeng to Dolonor, and from Dolonor through Kalgan to Kweihua by a branch line. The other line is the Taonanfu-Jehol Railway, and the Japanese Government proposes that after reaching Chaoyang, the line, instead of running to Jehol, be changed to

go to Hututao. The Chinese papers comment that if the proposal is approved by the Chinese Government, the Japanese will control these cities commercially.

The *Chung Kuo Kung Pao* says that since the Japanese Government secured the right of building the four railways in Manchuria from China, the Japanese Minister in Peking has made arrangements with the Peking Government as follow :

1. Out of the four lines, the Shih-ping-chieh-Taonan and the Kaiyuan-Hailung lines should be constructed first.

2. The construction works will be entrusted to the South Manchurian Railway Company while the Yokohama Specie Bank will do the financing.

3. The estimated cost of building the two lines is $20,000,000, to be supplied by the aforesaid Bank in two instalments.

4. The construction works will commence in April of this year and finish within six months so that the two lines may be opened to traffic before the end of 1914.

JAPAN

Profitable State Lines.—A responsible official of the Japanese Imperial Railways, quoted by the *Jiji*, remarks that the railway authorities estimated the net profit for the present fiscal year ending March next at Y.15,000,000, but the year's working has been profitable beyond their expectations. Even after deducting various unbudgetted expenses, the net profit for the year promises to show an increase of close upon Y.2,000,000 over the estimate. It is impossible to estimate the revenue for next year on the basis of this rate of increase, so in compiling the railway estimates for next year the net profit has been estimated at Y.17,400,000.

This year the Taisho Exhibition is to be held in Tokyo in the spring, and the Coronation ceremonies are to take place in the autumn. From these and other forthcoming activities a revival in business is anticipated this year, and a net profit of not less than Y.20,000,000 is expected from the railways. An understanding has been come to between the railway Bureau and the Finance Department that the increased profit over the estimates should be used for the expenditure on railway construction and improvement. If the same amount as for the present fiscal year is spared by the Finance Department for the purpose mentioned, the total amount available next year for this purpose will exceed Y.43,000,000. In this way the Imperial Railway authorities hope to be able to carry out the construction of new lines on a large scale.

Railway Extension.—It is understood that the Japanese Railway Board has, after repeated conferences, decided to complete seventeen lines with a combined mileage of 242 during 1914, as detailed below :—

Lines.	Sections.	Mileage.
Shinjo.....	Imadegawa-Kajiya	8,63
Taira	Koriyama-Mihoru	7,56
Taira	Taira-Nishiogawa	6,55
Tokushima..	Kamada-Ikeda	25,27
Sendai	Kushikino-Sendai.....	7.33
Shinjo.....	Kiyekawa-Sakata.....	15,04
,,	(for Freight only) Sakata—the harbour	1,54
Ganetsu	Nozawa-Tsugawa	10,14
Murakami ..	Shibata-Chujo	8,08
Murakami ..	Chujo-Murakami	12,50
Taira	Mikame-Ono-Shinmachi .	20,66
Hojo	Kisaradzu-Minato	14,62
Hamada	Oda-Ota	10,61
Tadotsu	Kwanonji-Kawanoya	9,62
Sayeki.....	Oita-Saisaki	11,58
	LIGHT RAILWAYS.	
Yubetsu	Kakeshibe-Shimokitahara	18,00
Funakawa ..	Nita-Wakimoto	5,24
Nagai	Noshigo-Nagai	0,12
Miyagi	Kumamoto-Otsu	13,70
Miyagi	Otsu-Shimono	10,68
Inukai.....	Oita-Nakahanda	7,23
Total		242.47

CHOSEN (KOREA)

New Railways Open.—The Tajon-Mukpho line in Chosen has been completed and is now open to the public. The work was spread over a period of eleven years in the days of the late Superintendent-General Viscount Sone, but the period was shortened to six years upon the assumption of the Governor-Generalship by Count Terauchi. The line, with Tajon, Wonsan and Mukpho as termini, extends 175 miles and was constructed at a cost of 760,000 *yen*. The completion of this railway is calculated to contribute not a little to the exploitation of the natural resources in the Peninsula, since it runs through the four great fields, namely of Kankyong, Chongju, Kinche and Naju.

SIAM

The Northern Railway.—The British Vice-Consul at Nakawn Lampang (Mr. W. A. R. Wood) reports that he recently journeyed to that place from Chiengmai along the route of the proposed Northern Railway. This line will eventually connect Bangkok with Chiengmai, and is expected to be completed in 1918, but at present it is only open as far as Pak Chan, about 350 miles from Bangkok.

The general direction of the line follows the main caravan route from Phre to Chiengmai, but very considerable detours from it have been made in order to avoid very hilly districts. Consequently the whole route presents no very serious engineering difficulties, although there will be a tunnel 1,350 metres (1,470 yards) long at Khoon Tan, and a short tunnel, about 140 metres (153 yards) long, near Pang Puei. The Khoon Tan tunnel is being bored through practically solid granite, and although work is continuous (day and night) and blastings are made about every four hours, only an average depth of about one yard is excavated each day. Boring is being carried on at both ends on two tunnels, one above the other; the northern end has been excavated for 120 metres (130 yards), and the southern end for about 90 meters (98 yards). At this rate the two ends will not meet for at least 18 months, and it will, of course, be much longer before the upper and lower tunnels are properly joined up. As, however, the railhead is not expected to reach Khoon Tan until late in 1917, the tunnel will probably be completed by the time it is required.

The bridge across the Me Yome river at Pak Chan will not be properly finished until 1914 but, in spite of this, another section of the line—from Pak Chan to Pak Ta—will be open to traffic shortly, and a further section will be opened to Ban Pin about April, 1914.

H.M. Vice-Consul adds that he understands that a road suitable for motor traffic is to be constructed between Nan and Phre at a cost of 200,000 ticals (about £15,400).

Southern State Railways.—Construction work on the Southern Siamese State Railways has proceeded so satisfactorily that it was definitely decided to hand over to the Traffic Department on the 1st January, 1914, on the Trang side: Kao Kab—Tung Sawng Section (km 50—94) and on the Singora side: Singora—Patalung (km 1—90).

From the 1st of January therefore, daily trains for passengers and goods were run on both sides of the Peninsula for about 90 km.

The section Patalung-Ronphiboon-Tung Sawng should be ready at the latest by the 1st July, also the branch-line from Ronphiboon to Nakon Sri Tamarat, so that in about 6 months hence daily through trains should run from Trang via Tung Sawng to two ports on the East Coast of the Peninsula, viz., to Singora and to Nakon Sri Tamarat.

MALAYA

Siam-Federated Malay States System.—The *Bangkok Times* says :—The railway negotiations between Siam and the F.M.S. federal authorities have resulted in the amount available under the Southern Railway loan being increased by £750,000 at the same rate of 4 per cent. and in a decision to link up the Siamese line with the Kedah Railway. We learn from the Ministry of Communications that the Loan had to be increased to build the new line, but we fancy most of the increase will really be needed to complete the original project.

GENERAL

Burmah-China Railway.—At a meeting of the Manchester Chamber of Commerce on December 17 a paper was read by Mr. T. M. Ainscough on the proposed new railway across the Burmah-Chinese frontier from Bhamo to Tengyueh. He strongly advocated the making of the line, both on political and commercial grounds, and said that the development of the province of Yunnan would be advantageous to the trade of Lancashire. The chairman said that a memorial to the India Office had been suggested, but it was thought wise to hold it over until they had heard Mr. Ainscough's paper.

Mr. Ainscough first described the early explorations and commercial missions in this frontier region, and he said that so recently as 1875 adverse reports were made as to the possibility of establishing railway communication. One result of the extension of British rule to the Shan States in 1885 was the construction of the railway to Mandalay. Latter a scheme was formulated for the extension of the line into China by way of Kunlong. In March, 1903, the line was completed to Lashio, but the difficulty of continuing the track was so great no further progress had been made. Subsequently new surveys were made between Bhamo and Talifu—an important trade centre —*via* Tengyueh, and this time it was reported that the construction of a railway was feasible. It was believed that the first section, as far as Tengyueh, could be completed at the cost of £763,000, and that the local traffic would be sufficient to enable a dividend of 2 per cent. to be paid from the start. The remaining section would cost four and a half millions sterling, and the traffic prospects were not so good, but Mr. Ainscough expressed the opinion that a considerable development of trade, especially in cotton yarns and goods, would follow the construction of a railway.

Mr. Ainscough considered also that political reasons alone would justify the project, because France was seeking to extend her trade interests in Yunnan-fu. Another weighty consideration was the fact that goods which entered China by the French railway were subjected to heavy tariffs, which were not imposed on the merchandise entering by way of the existing Bhamo mule track. A great deal would depend on the attitude of the British Government as to the manner in which the scheme would be received by the Chinese authorities, and strong pressure from the British Legation at Peking would be helpful. He suggested that as a preliminary measure representations should be made to the Secretary of State for India setting forth the urgent need for the construction of the railway, both from the point of view of the welfare of Lancashire trade and of the interests of the Empire as a whole.

On January 17 it was reported that the British Government has approached China with reference to the construction of a railway from Burma to Tengyueh and Talifu. If the consent of the Chinese Government is obtained, states Reuter's Agency, it is believed that difficulties will arise with regard to financing and construction of the proposed line owing to the immense difficulties of the country through which the railway would have to pass.

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THE PROJECTED RAILWAYS IN SZECHUAN, YUNNAN, AND KWEICHOW PROVINCES

OPENING CHINA'S WEALTHY MOUNTAIN-LOCKED PROVINCES.

Whatever bearing international politics in railways may have upon the ultimate dominance of western China as embodied in the rich and practically undeveloped provinces of Szechuan, Yunnan and Kweichow, the fact stands out prominent and undeniable that no matter how or by what financial agency railways are built they will be of immense importance in the opening of the resources of the region and be of incalculable benefit to the people in solving their economic problems. Therefore it may not be uninteresting to devote a little attention to this aspect of the great advance towards the destruction of the isolation of "outback" China that is now being signalised by the granting of rights for the construction of railways into the three provinces and the linking of their capital cities.

The Chinese people and Government have vigorously resisted years of pressure to permit railways to be built with foreign capital into Szechuan province in particular, fearing—and the as yet unborn years might substantially demonstrate that there were solid grounds for apprehensions—that such a thing would augur the loss to China of a province which easily might be developed into a veritable self-contained kingdom. For Yunnan and Kweichow they have not entertained the same regard. Although Yunnan in particular had through the ages supplied the silver, the copper and much of the gold for the use of the Throne and the Government it was not as near to the officials of Peking as Szechuan. More Szechuanese, with their wonderful stories, came down that great and only artery of communication, the Yangtsze-kiang, and Peking officials who braved the terrifying rapids of the upper part of the rivers elected to take for granted what existed on the southern side of the mass of mountains marking the region, and content themselves with any stories that might be told them while enjoying the ease and comforts that could be secured in the great cities of Szechuan. Tales of the wealth of Szechuan thus substantiated by officials were therefore received with greater credence in Peking, and while it was known that Yunnan, the "cloudy south," and Kweichow, the "precious region," contained treasures which men risked their lives and endured long exile from the centres of civilisation and learning to secure, the provinces were not appreciated so much as was the one of the "four rivers." And, further, Szechuan, being by far the largest of the 18 provinces which constituted China Proper, having an area of 218,533 miles, and a population estimated at over 50,000,000, loomed larger in the official imagination. Yunnan contains but 146,718 square miles, with an estimate of 8,500,000 inhabitants, while Kweichow is still smaller with 67,182 square miles and 7,300,000 inhabitants.

A corner on the Ichang Gorge at High River, Upper Yangtsze.

Primarily, of course, the natural physical conformation of the three provinces was the chief bar to mutual familiarity developing between what might be called the mountaineers and the peoples of the great plains extending eastward to the sea. The easiest avenue of approach from the east was by way of the Yangtsze, and then over ceaseless mountains. The turbulent wall of water, which tumbles through the gorges and which has to be climbed from Ichang upwards into Szechuan, was sufficient to deter any but those who could not avoid it, or who anticipated great benefits, from making the journey, while the difficulties and the hardships of overland travel into Kweichow and Yunnan kept them practically isolated from the other parts of the world. It was only the hardy and the adventurous in the plains who could undertake a return journey, while with the exception of traders, the inhabitants of the plateaux, though capable of great endurance, seldom travelled towards the sea, though they maintained unceasing intercourse with each other, journeying either by river, where possible, or on foot, with pack animals carrying their belongings. Between the inhabitants of Szechuan, Yunnan, and Kweichow there are many characteristics in common, and the conditions of life bear close resemblance. Climatically, too, there is similarity, and they are as alike in their fogginess as they are generally in their isolation.

The routes mostly followed by the trading men of the plains to Szechuan and the north of Yunnan and Kweichow were by way of the Yangtsze ; to central Kweichow by way of the Mandarin

road from Changsha in Hunan, up the Yuan river valley and over the mountains to Kweiyang, the capital ; and to central Yunnan by way of the rivers from Canton and by mountain paths to Yunnanfu, or from Indo-China either up the Red River, or over the mountains. All these journeys were tedious and long. But the routes selected and traversed for centuries are those which were the easiest, and which, difficult as they are, will in a measure furnish the routes for the railways that now are to be laid to annihilate distance, time, and heart-breaking mountain barriers. Though most of the rivers of Yunnan and Kweichow are not navigable, they will, to a tremendous extent, facilitate railway construction, for it will be through their tortuous valleys that the engineers will be able to locate the lines which will eventually carry the trains of civilisation and modern economic benefits into the mountain locked region.

Of the difficulties of establishing railway communication much might be written. Szechuan is virtually covered with high mountains interspersed with rich valleys. In the east the chains run in a north-easterly and south-westerly direction rising to 6,000 feet: then the great Red Basin containing the rich plain of Chengtu, the capital, with an elevation from 650 to 1,900 feet above the sea, broken by confused hills rising to 2,000 feet above the plains, leads westwards towards Tibet, which is cut off by massive ranges up to 19,000 feet high, and northward to chains up to 8,000 feet which form the boundary of Kansu province. In the mountain area high peaks, gorges and chasms, and long, roaring torrents are the feature : on the plains the fertility, the irrigation, the primitive methods of mining, and the industry in agriculture of the population are the chief characteristics which attract the observer.

Yunghsien District, near Yachow, Szechuan

The latter conditions are similar on the high tablelands of Yunnan and Kweichow, though both possess the additional advantage in some respects of a torrid and tropical climate. Yunnan is, however, more distinctive than Kweichow in its climatic varieties. Where it marches with Tibet the lofty mountains are covered with perpetual snow, and are cleft by deep gorges filled with heavy and suffocating air, but to the east the bulk of the region is composed of plains with an altitude of 6,000 feet, and hills rising another 3,000 or 4,000 feet above them. Near the Yangtsze there are high peaks, gorges and deep chasms, with a sparse population, and a damp, unhealthy climate. In the south there is tropical verdure, and to the east there are "large and verdant plains, now encircled with boundless horizons, now studded with mounds and hills, but everywhere abounding in marshes, lakes and rivers. The sky is pure, the temperature mild and pleasant, while the population is concentrated in the valleys and near the lakes." In the limestone regions fir-trees cover the mountains, while in those of schist formation splendid forests abound. In the north-east on the boundary of Kweichow is a broken mass which extends well into Kweichow.

Sugar loaf peaks characterise the mountain masses of Kweichow, which is also a great tableland, with a mean altitude of 4,200 feet, the valleys in the south-west, however, attaining an elevation of 6,500 feet above the sea, the peaks rising to 9,000 feet. Basin-shaped depressions mark the tableland, which is intersected by rivers running torrentially in narrow and deep gorges. Abruptly it descends on the south and, again to use the words of Pere L. Richard "it is through a series of steps that a passage is effected from one valley to another." The Chinese proverb has it that seventh-tenths of Kweichow province are mountains, though they are less elevated than Yunnan and the climate is less healthy. Likewise Kweichow differs from Yunnan in that it has not the lakes and rivers, and its soil lacks the fertility of its south-western neighbor. In general, while the physical conditions of Kweichow have compelled observers to describe them as a "sea of mountains," those of Yunnan have been likened to "an immense staircase" in the north-east, while in the west and south they form "a vast field furrowed with long and deep ravines."

Thus, then, the orographic character of Szechuan, Kweichow, and Yunnan is the chief barrier to railway communication, and has been for ages the reason for the comparative isolation of those three provinces. But the engineer with modern methods can overcome the natual obstacles, and is at work overconing them, the only question to be considered in the task being—cost.

All construction work will be difficult, cutting, tunnelling, and bridging, though more of the two former than the latter, and costs of operation will be determined by the gradients. Plateaux have to be scaled in each province, but the great obstacles are the cross mountains, the deep gorges and rocky chasms, which combine in making the finding of levels difficult.

Major Davies, in his report on a reconnaissance from Burma to the Yangtsze estimated that a metre gauge railway would cost for the 1,000 miles from £15,000,000 to £20,000,000. This line run would run from the Kunlong ferry to Suifu, on the Yangtsze, via Yunnanfu, and traverse difficult country, necessitating at times a grade of one in 25, with possibly a few short lengths of rack. The heaviest of the grades are encountered near the Yangtsze, a section over which the line to connect Chungking with Yunnanfu must run.

The cost of the 288 miles of the railway which runs through Yunnan and connects Indo-China with Yunnanfu, was £6,600,000, according to official figures. Other authorities place it higher, but the tremendous difficulties encountered in building this railway will be repeated on whatever line is brought into the province from any other direction. Apart from the immense task of mounting the plateau and penetrating the ultimate

appalling gorges set before the French engineers for solution, the death rate among the workmen who had to toil in the jungle fastnesses of the fever laden Namti Valley was terrible, and the labor problem was almost as great as the physical obstructions. On the Yangtsze side of the province fever is likewise to be feared and, also, it may be expected when work is being done—if it is undertaken—on the line from the West River valley, on the south-east.

Mr. K. S. Low, who surveyed this route from Poseh considers that it will cost to build the 435 miles from that place to Yunnanfu some $51,000,000 (about £6,375,000). On the railway now in course of construction from Hankow to Szechuan along the Yangtsze it is estimated that it will cost anything from £15,000 to £20,000 per mile. It is to be said, however, that so far no engineer's report has been made on the line.

Thus we are able to get a fair idea of the cost per mile of entering Szechuan and Yunnan from four different routes, and those figures might also be applied to Kweichow, though Mr. H. C. Carter and staff of engineers who are now making a reconnaissance over the line from Shasi, on the Yangtsze, to Shingyifu, in the southwest of Kweichow province, will furnish an estimate in a few months which will settle any doubts so far as that route is concerned.

A Scene in Kweichow, near Panghai

The lines which China has contracted to build in Szechuan, Yunnan and Kweichow are as follow:—

From Hankow to Chengtu, via Chungking approximately	1,100 miles
From Chungking to Yunnanfu, approximately	570 ,,
From Yunnanfu to Yamchow, via Nanning approximately	660 ,,
From Shasi to Shingyi, with a branch to Changsha from Changteh, approximately	760 ,,
Total ..	3,090 miles

The estimated cost in Mexican currency for the engineering work on the line into Szechuan from Hankow to Chengtu is as follows:—On the section from Hankow to Ichang, $67,000,000:

From Ichang to Kweichow (in Hupeh), $15,000,000;

From Kweichow (in Hupeh) to Chungking, $81,000,000;

From Chungking to Chengtu, $72,000,000.

These figures are approximate only, but they give a total of $235,000,000, and to that amount has yet to be added the financial charges in connection with the raising of the loan, etc., which can be estimated at about a third more, or say, a total of $313,333,333. This would work out at something like £28,000 per mile. A proper study of the country to be traversed may reduce these figures, but they are given because they are the ones which the financers will have to consider in determining the amount of the loan to be raised for the purpose of the railway.*

What is demonstrated by these figures is that the cost of putting a railway into Szechuan, Yunnan or Kweichow will be in the vicinity of at least £20,000 to £28,000 per mile for the mountainous parts, and, as all the routes are beset with heavy masses of mountain, it is likely that the average cost per mile for the whole system will not be less than from £15,000 to £20,0000. Taken at £18,000 per mile it will mean that to build the minimum of 3,090 miles China will have to expend £55,620,000 at least.

The question whether this expenditure is justified is answered by the importance of the territory to be covered; the value of the undeveloped wealth which it undoubtedly contains, and the extent of the population which will be benefitted. In China, railway building differs from similar work in countries such as Canada, America and Australia, where lengthy lines have been run into the vast uninhabited spaces to which settlers have only been induced to go by the fact that a railway has been built. The raison d'etre of railways in the primeval parts which have been opened up in the new countries, is the creation of new settlements, but that does not, to any such extent, actuate those who open communication in China. Here, for centuries, populations have spread to the uttermost ends of the country, and the traveller to any part of the vast regions to-day may find wherever he goes large walled cities, prosperous towns, and continuous cultivation. Populations in China are virtually waiting for railways wherever any length of line might be laid. Out in Szechuan, Yunnan, and Kweichow there is trade. It has been going on for æons. There are big populations in Szechuan in particular, and had the Mahommedan rebellion (1856-1872) not devastated and depopulated Yunnan and Kweichow those provinces would have been peopled like the provinces less seriously affected. Railways are needed in these provinces not only to open up communication, but also to develop the vast mineral and agricultural wealth, the former of which has not yet been touched on scientific lines. They are also required for even a still more important reason and that is to enable the Central Government of China to strengthen its hold upon possible seats of rebellion, and to assist it to defend its frontiers.

With a progressive Government energetically devoting itself to the betterment of the country by liberal laws for the advancement of commerce and industry, railways to the three provinces should pay, apart from possibilities of large passenger traffic. All three are possessed of great deposits of silver, copper coal and iron, with the addition of gold, salt, zinc, quicksilver, argentiferous lead, etc. Agricultural produce grows in Szechuan, Yunnan, and at least the south sections of Kweichow, in abundance—with no markets other than these near at hand. The people have more than they can consume, and therefore crops are grown mostly for self-sustenance.

Wheat and barley, maize, millet, buckwheat, sesamum, rice and fruit of different kinds such as apples, pears, peaches, walnuts, quinces, and cherries are grown in abundance, and the extremely excellent grazing grounds permit of the breeding of large flocks of sheep, herds of ponies and cattle. Pigs thrive in abundance, the staple meat of the people

* See note at end of this article.

being, in fact, pork. There would be offering for export the valuable mineral products, as well as cereals, hemp, livestock, horns, hides, etc., while the imports would be raw cotton, piece goods, kerosene, cigarettes, and the hundred and one articles of European manufacture which the Chinese have a predilection for. As Colonel Manifold says of the inhabitants of Szechuan, so of the people of Yunnan and Kweichow; they, "like most other Chinese, and unlike most other eastern nations, require no education to make them appreciate articles of foreign manufacture. It is only necessary to develop the natural resources of the province and to give its population facilities for securing a market to ensure that the money is forthcoming. The Szechuanese will then buy everything that he thinks will wear better than the home made article, or which he is unable to make himself, or which will be of advantage in saving labor."

Railways built at such a heavy initial cost could not, of course, become an immediately paying commercial speculation, but they would pay the Central Government in many directions, and with proper handling, under expert traffic officials, combined with a judicious forward industrial policy on the part of the Government, might easily be brought to the paying stage in a very short space of time. Insofar as the French railway from Haiphong to Yunnanfu is concerned it must be understood that it is not being conducted in a manner to inspire confidence and encourage trade*, nor is it operated with the idea of benefitting other trade than French. Were the line from Haiphong controlled with the interests of Yunnan and the railway as the first consideration, and not subordinated to the interests of French trade in particular, it would tell a story different from that which it does tell.

View of Tzeling, a Salt Centre of Szechuan Province

However, to obtain some idea of the portion of the trade which, in both Szechuan and Yunnan can be checked, it is necessary to turn to the reports of the Maritime Customs Commissioners in the few remote open "ports" in those provinces. While the details for the year 1913 are not yet available the total collections at the "open ports" of Chungking (Szechuan), Mengtsze, Szemao and Tengyueh (Yunnan) were.—

Chungking	.. ..	†Haikwan Taels	411,195
Mengtsze	.. ..	,, ,,	365,852
Szemao	.. ..	,, ,,	6,454
Tengyueh	.. ..	,, ,,	64,482

In 1912 the Revolution naturally affected trade in the distant parts, and that fact should be remembered when considering the trade of that year in provinces so far removed from the sea as Szechuan, Yunnan, and Kweichow. At Chungking, however, the returns were very little less than in 1913, Taels 404,482 being collected, as against Taels 378,889 in 1911 (also a year of revolution, particularly in Szechuan) an increase of Taels 25,593. The interesting point is that the *export* tables show that the increase of exports for 1912, as compared with 1911, amounted to Taels 48,051 and Taels 31,664 as compared with 1910. The net value of *foreign goods* imported, direct and coastwise, was Taels 7,815,401, a decrease of Taels 4,743,999 on the corresponding figures of 1911. The Commissioner of Customs at Chungking particularly refers to the manner in which foreign trade was benefitting local people by citing a rise of 15 to 20% in a new article of export for the foreign market, an increase which went mainly into the pockets of the producers; this despite the absence of all but most perilous communication. What these perils are is also indicated by the Commissioner when he says that during 1912 inward bound junks to the number of 240 were either wrecked or stranded at the rapids. No mention is made of the disasters to junks bound down-stream. The total value of imports and exports was Taels 26,872,475 as against Taels 32,308,635 in 1909, showing the effect of the revolution of 1911-12.

The Ichang Commissioner reported that in 1912 the export of hides, skins, and wheat had more than trebled, vegetable tallow rose from 12,041 piculs in 1900 to 30,047 piculs; varnish was almost doubled; nutgalls increased fully four times; leaf tobacco rose 150 per cent, while coal also rose 150 per cent.

In Yunnan trade was also affected by the revolution, yet at Mengtsze the Customs experienced a record year. The net value of the foreign trade reached a total of Taels 19,569,689, and the Commissioner says, " with the aid of outside capital the Government of Yunnan will be able to extend its railway system and develop the mines with which it is so richly endowed." The collections for the year were Taels 361,244, as against Taels 245,383 for 1911. Chinese goods exported were valued at Taels 11,847,849, compared with Taels 6,750,304, the enormous increase being due mainly to the output of tin at the Kokiu mines—95,624 piculs in 1911 and 138,331 piculs in 1912. The Commissioner adds that " the washing and smelting plants imported in 1910 and 1911 by the Kokiu Tin Mining Company are at last in working order and were completed during the year by the installation of an electric plant, and an important increase in the output of tin and an improvement in its quality are therefore keenly anticipated in the future. The exploitation of a new tin mine is being started at the foot of the Kokiu mountains, in the Mengtsze plain, by another company. Zinc (spelter) rose from 2,732 piculs in 1911 to 12,494 piculs but *the great distance of the producing centres*, Tungchwanfu, *in north Yunnan*, and Hweilichow, *in south Szechuan, on the left bank of the Yangtsze*—both far from actual railhead (Yunnanfu)—precludes the idea of a much-

*Attention is drawn to an article which appeared in the FAR EASTERN REVIEW of September, 1912, entitled "Closing the Door in Yunnan," which sets out the manner in which trade other than French is discriminated against.

†The Haikwan (or Customs) Tael equalled during 1912 3s. o¾d. in English money; 74 cents U.S. Currency; 3.85 Marks; 1.49 Yen; and 152. Mexican Currency.

developed exportation for the present." This particular fact of long distance porterage to reach the railway is noteworthy. "In August the Railway Company (French) raised its freight on tin for Haiphong from $40 to $45 per ton of 1,000 kilos, a measure which was felt very much by the merchants *and will hasten the construction of the Yunnan-Kwangsi railway.*" The italics are ours. This reference to the mineral development bears out the arguments advanced as to the necessity of railways to these distant provinces, and the mention of the increase in freights on the French line substantiates what is said in another part of this article in reference to the freight rates on the Yunnan-Haiphong line.

At the remote port of Szemao in southern Yunnan the volume of trade reached Taels 262,801, the value of foreign goods imported being Taels 219,578, which was carried by 5,187 men and 19,698 pack animals.

At Tengyueh, another remote port in the far south-west, served only by carriers or pack trains, the foreign goods imported reached Taels 1,842,000, nearly 78% of which were sent inland under transit pass. Chinese goods to the value of $682,000 were exported, 70% being Szechuan silk.

These references to Customs statistics are made merely to show what trade is carried on, despite the tremendous difficulties of transport and the great distances from the sea, and are only from those places where the Maritime Customs have stations. Trade passing through other routes is not recorded, and there are no means of accurately ascertaining what it is, but the Customs reports are sufficient to show that railway communication would not only create a tremendous change in the economic state of the provinces concerned but would also benefit foreign trade immeasurably.

Having touched upon aspects of the question indicating the reasons why railways have not yet penetrated the mountain ringed provinces, and the reasons why communication by rail should be opened up, we will give some description of the various routes by which the Chinese Government are now prepared to undertake the construction of lines into Szechuan, Yunnan, and Kweichow. In this connection, too, we wish to draw attention to an article appearing on another page, in which, under the title of "The Railway Development of Western China," Mr. Arthur J. Moore-Bennett discusses the question. Mr. Moore-Bennett brings to his task a personal knowledge of the routes he refers to and is competent to criticise them. We content ourselves with dealing with the broad features for the general information of readers.

Portion of the Szechuan Railway from Ichang built by the Chinese

The routes by which the Chinese Government have made agreement to enter the western provinces are as follow:—

First, the Government has agreed to the extension of the Hankow-Szechuan railway, now being constructed from the Hukuang Railway Loan funds, from Kweichowfu to Chungking and Chengtu, the Capital of Szechuan.

Second, on December 18, 1913, the Government signed a preliminary agreement with Lord ffrench, representing Messrs. Pauling and Company, of London, to construct a line on a percentage basis contract from a point opposite Shasi, on the Yangtsze River, west of Hankow, to the south-west of Kweichow province, to join the projected line from Yunnanfu to the sea via Shingyi and Nanning.

Third, on February 11, 1914, the Government signed an agreement with the Banque Industrielle de Chine, a Sino-French institution, for a loan to build a railway from Yamchow on the coast, west of Pakhoi, to Nanning, and Shingyi, to Yunnanfu, the capital of Yunnan province, and on to the Yangtsze river at Suifu, and thence to Chungking, where it will connect with the line mentioned in the first paragraph.

Fourth, on August 4, 1913, the Government signed an agreement with Belgian representatives for the flotation of a loan to build a railway from Tatung, in the north of Shansi, through Taiyuanfu, to Tungkwan, the junction with the railway in course of construction from Lanchow to the sea, and accorded in that agreement the right to extend the line southwards to Chengtu the capital of Szechuan.

The fourth line is so far but a right of extension. It is not yet decided to build it, but the first three are to be built, and no doubt financiers will soon be active raising the necessary capital for the purpose. They will, when built, be sufficient to give the three provinces adequate railway communication with the other provinces of China and the outside world for many years to come. The following is merely information on, and not criticism of, the routes those lines will probably take.

From Hankow to Szechuan

It has been, of course the particular desire of politicians financiers, engineers, and traders, interested in railways in China to construct a line which would, among other things, reduce the journey into the heart of Szechuan province from a strenuous and dangerous ordeal by way of the Yangtsze River to one of comparative safety, comfort and speed by rail. The conflict between, and the subsequent adjustment of, British and French schemes having in view the object of building this railway were fully discussed in the January issue of the FAR EASTERN REVIEW, and it is not necessary again to deal with that aspect of the question. Suffice it to say that as a result of discussion of the particular interests of the British, Americans, Germans and French the financial representatives of those countries formed a Group to finance and construct what is known as the Hukuang railways, the term Hukuang being derived by the union of the two first characters of the provinces of *Hu*-peh, *Hu*-nan, and *Kuang*-tung, through which the lines to be built by the Group will run. This system comprises

(1) a line running south from Wuchang, opposite Hankow, to the southern border of Hunan, where it will connect with what is known as the Yuet-han railway—the Chinese line running from Canton northwards to the Hunan border—which is destined to form part of the trunk railway from Hankow; and

(2) a line westwards to Szechuan from Hankow, or the best available point in the vicinity.

In the original negotiations with the Chinese Government the arrangement was come to that Chinese capital should build whatever lines were needed in Szechuan province, the Quadruple Group terminating their system at Kweichow, just over the frontier of Szechuan, the proviso being clearly made, however, that if it was ultimately decided by the Chinese to use foreign capital the necessary amount would be accepted from the Group.

Content with this arrangement the members of the Group decided among themselves the division of engineering influence on the lines to be financed by them, setting aside the section from Wuchang to the Kwangtung border for the British, the section from Hankow, or vicinity, to Ichang for the Germans, and the section from Ichang to the Szechuan frontier for the Americans, the French standing out of this allotment in anticipation of obtaining their share in the ultimate extension to the capital of Szechuan, which, with considerable foresight, they located as the "sphere" most essential for the development of their plans for the domination of Szechuan and Yunnan provinces. To the various parties constituting the Group it was a foregone conclusion that the Chinese would never be able successfully to build a line through Szechuan, and their confidence in the belief that the Chinese would ultimately have to approach them for the capital if they wished to penetrate

Szechuan with a railway was not misplaced and has been justified by time. Having thus come to a satisfactory mutual arrangement among themselves they negotiated an agreement with the Chinese Government for a loan to construct the Hukuang railways, the document being signed on May 20, 1911. This authorised the Banks to issue a five per cent. gold loan for an amount of £6,000,000 to be devoted

(1) to the redemption of bonds to the value of Gold $2,222,000 issued by the American China Development Company on behalf of the Imperial Chinese Government, and

(2) the construction of a Government railway main line from Wuchang to the southern boundary of Hunan, connecting with the Kwangtung section, an estimated distance of 900 kilometres, and

(3) a similar line from a point at or near Kwangshui, connecting with the Hankow railway line and passing through Siangyang and Chingmenchow to Ichang, an estimated distance of 600 kilometres; and from Ichang to Kweichowfu, in the province of Szechuan, an estimated distance of 600 kilometres, the total length of this, "the Hupeh section of the Szechuan-Hankow railway line,"—and the one in which we are particularly interested in this article—being 900 kilometres.

Three days after the loan agreement was signed the representatives of the Banks concerned met in Paris and arranged, among other things, for the participation of the various parties in the event of the extension.

By this arrangement the French now control the section from the Capital of Szechuan to the end of their allotted distance, for, as mentioned in our last issue, the Chinese Government have now agreed to the extension of the line through Chungking to Chengtu, and the Groups are making arrangements to have the necessary finances raised. In all, the distance from Hankow to Chengtu via Chungking will be somewhere in the vicinity of 1,100 miles, the whole Hukuang system amounting to about 1,700 miles, and that, in short, is to be divided as equally as possible between the four nations composing the Group, both as regards engineers, purchasing commission and profits from flotation of the loans.

Before the Chinese Government had come to an agreement with the Quadruple Group to finance the line from Hankow to the eastern edge of Szechuan, Chinese merchants had made an attempt to connect Ichang and Chengtu, a semi-official company having been formed for the purpose by Viceroy Hsi Liang, in 1904; to prevent a foreign loan being negotiated. A sum of Tls.15,405,902 (about £2,000,000) had been collected in shares and taxation, but only about 28 per cent. had been subscribed voluntarily, the balance having been obtained by forced levy of a tax upon land holders. A meeting of the Company—the Szechuan Railway Company—was held in November, 1909, when it was confessed that although the first sod had not been turned only Tls. 10,421,958 (about £1,357,000) remained in hand, the staff of the company on the books being 209, drawing some £8,500 per year in salaries and wages. This meeting, however, gave a fillip to the enterprise, and the first sod was turned on December 10, 1909, at Ichang, though a controversy had waxed furiously on the question of whether the section between Ichang and Wanhsien or between Chungking and Chengtu should be commenced first. The Ichang supporters won the day; the first spike was driven at Ichang on July 21, 1910, and by October, 1911, when the revolution broke out, 16 miles of line had been built, while, preliminary work had been begun over sixty miles.

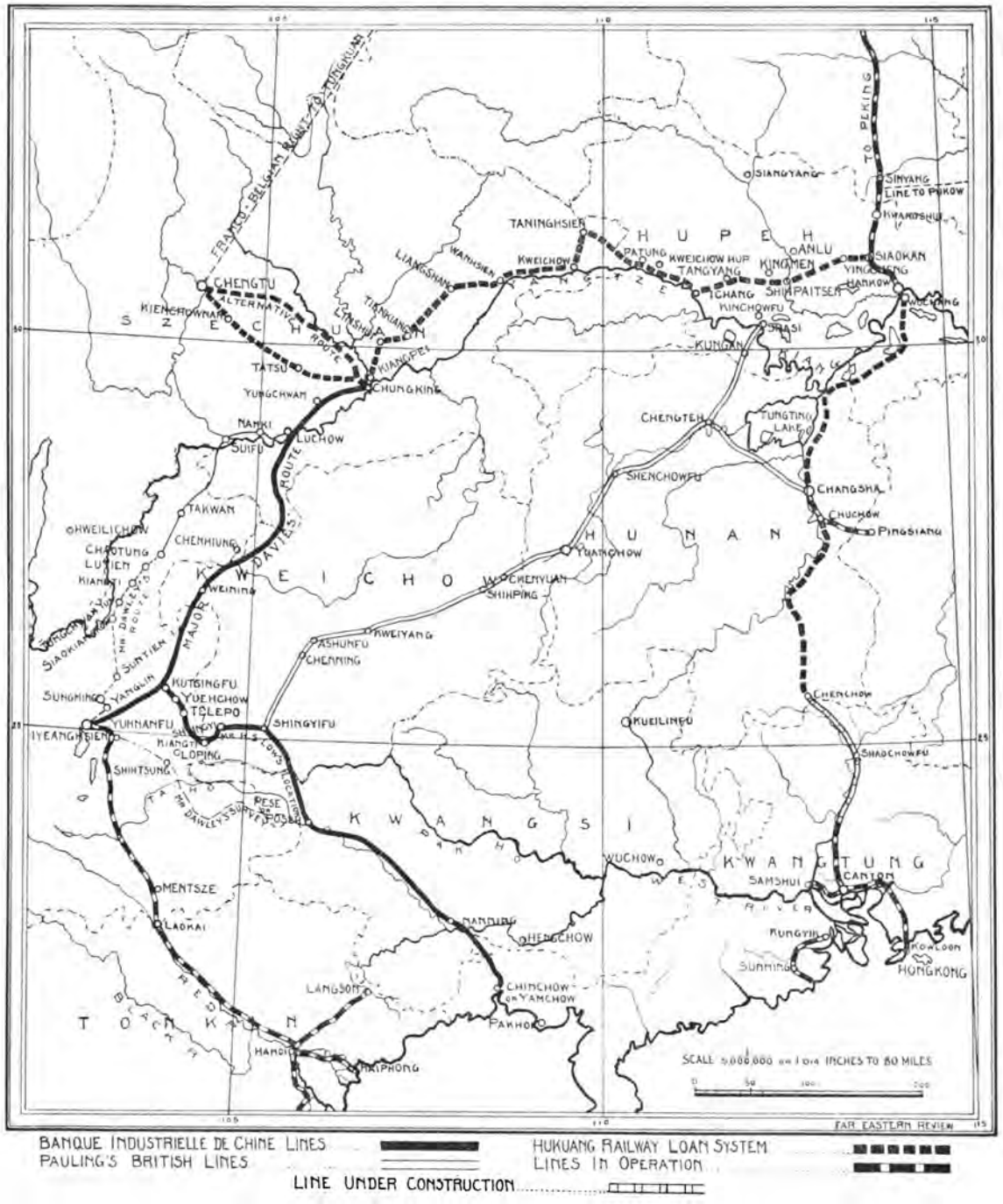
The work actually completed or in hand might be summarised thus: The bunding of the wharf was finished, three goods godowns were erected, earth work at the wharf and station were finished, a double track was laid from the wharf to the station, the Ichang station and four stations along the line were finished, two engine sheds for twelve locomotives, a water tower, and machine shop were finished, the head administration office, store department and staff quarters were finished, stone retaining walls and over fifty bridges were finished, two tunnels were completed, while over sixty bridges, and several tunnels were started. Altogether 15,000 coolies were at work, and construction was going ahead when the effort of the then Minister of Communications to bring about the nationalisation* of railways ended in the turmoil which precipitated the revolution.

The Yangtsze at Ichang

Work ceased completely, and the rolling stock of three Baldwin shunting engines, one first class private car, two second class passenger cars, four third class passenger cars, fifty high side freight cars, thirty steel ballast cars, and twenty flat cars stood over as a legacy for those who would ultimately take up the work, and the line which had been built rapidly began to deteriorate. An eventual examination into the affairs of the company disclosed many scandals, among the worst being the disastrous employment of funds to purchase shares in wild-cat rubber companies. This was the inglorious end of the attempt of the Chinese to build and control their own railways in Szechuan, and it was the death knell of the old policy of preserving the province from the encroachment of foreign finance and politics through the medium of railways. The Government would not permit, even if a wish for it had been expressed, any further private control of what must eventually be an important trunk line, and although there was great reluctance to do so the

*See Revolution Number of the FAR EASTERN REVIEW, April, 1912.

NEW RAILWAYS IN WESTERN CHINA



The black line running from Chinchow or Yamchow, on the coast through Nanning to Kutsingfu, and from Yunnan to Chungking shows the approximate route of the railway granted to the Banque Industrielle de Chine to capitalise by a loan. The Hukuang system now in course of construction is distinctly shown. The British section is from Yichang, near Chenchow, on the Kwangtung border to Wuchang; the German section is from the Peking-Hankow railway to Ichang; the American section is from Ichang to Kweichow, and the French section is from Kweichow to Chengtu. The Yuet-han Railway Company is building the southern section between Canton and the frontier at Yichang, but there is an effort being made to secure the rights of the company for the Hukuang Loan Group, or in other words to have the section nationalised and redeemed with a loan by the Group.

A 50 ton cargo junk descending the Glorious Dragon Rapid, Upper Yangtsze

Government in January, 1914, finally agreed to the extension of the line to Chengtu by the Quadruple Group.

It was not until January, 1913, that the Quadruple Group felt disposed to advance money to commence operations on the lines for which they had floated the loan. After the revolution the original security of the loan was found to have been rendered inadequate and a readjustment had to be made. The Government, too, had considerable difficulty in arriving at a satisfactory arrangement with the companies holding the rights over the Ichang section of the Szechuan railway and the Chinese private line between Changsha and Chuchow, which it was essential to redeem, as both were on the routes of the proposed trunk lines. Eventually, however, resumption was satisfactorily accomplished and survey work on the American section of the line to Szechuan, which embraced the unfinished line from Ichang, was the first to be commenced.

Thus was order created out of chaos, and thus was the work commenced upon what is destined to be one of the most important railways in China, a means of communication which will eventually give Chengtu connection with the sea over what will total approximately 1,700 miles of rails. The sea end of that line commences at Shanghai, and the traveller will journey via Pukow, Sinyang, and Hankow to his far distant destination. All the lines to make the connection are now under construction, or under survey, and what was once a dream is rapidly verging upon the reality.

The consummation is, however, beset with great difficulties. To connect the Pukow station, now in touch with Shanghai by rail, with the Peking-Hankow railway above Hankow is easy; to push to the west of Hankow is a heavy task. When the agreement was made it was the wish of the Chinese to start from the Peking-Hankow railway at Kwangshui and touch at Siangyangfu, then striking south to Ichang, but the great increase of haulage makes that route undesirable for a trunk line. As the low-lying nature of the country between Hankow and Ichang renders railway building almost impossible the engineers have surveyed other routes, and it is now recommended that the line shall branch off from the Peking-Hankow some eighty kilometres to the north—about Siaokan—and then take almost a direct line, taking advantage of the higher ground that is available along this route. There is a likelihood that the selected line will pass Yingchen, and go straight across to Tangyang and then to Ichang, but the trade route from Siaokan goes northwestwards to Anlu and then goes south-westwards to Kingmen, Tangyang and Ichang. However, the problem for the engineers is to select the the route which it is safest to build and straightest, and they are now engaged endeavoring to find a solution. The Engineer-in-chief of the German section recommends that a complete survey be made before deciding to build owing ot the high cost. He wishes to have the Siangyangpu branch built. Ichang, is 1,000 miles from Shanghai by river. It is important only by virtue of its position below the gorges of the Yangtsze, and figures mostly as a centre for the transhipment of cargo. All merchandise upward bound to Szechuan and Yunnan is transhipped from the steamers here and mostly placed on junks of from 25 to 40 tons burden, which are tracked laboriously through the gorges by gangs of coolies, often numbering 100 to a junk, and taking as long as three months in bad states of the river to cover the 400 miles to Chungking, while at some periods navigation is not possible at all. In addition to the junks, however, steamers have now been built to stem the rapids and despite the tremendous dangers manage to maintain a more or less regular service. At present one new boat is in course of construction for this purpose, and one is in operation, the "Shutung," commanded by Captain Plant, the pioneer navigator of the Upper Yangtsze. It is estimated that 10 per cent. of the junks which traffic through the gorges are lost, and with them go down whatever cargo they are carrying. The railway, when it is built, is bound to secure the whole of the trade now compelled to pass up and down through the gorges, and that was the prime inducement which influenced the Chinese to commence construction from Ichang.

While much earthwork, bridging and tunnelling was done by the Szechuan Railway Company the American engineers now surveying in the region believe that by going about 10 miles inland from the river they will be able to secure a route much shorter and of easier grade. The Chinese line followed the river to a greater or less extent and between Ichang and Wanhsien, about 140 miles, fifteen miles of tunnels, to say nothing of the heavy cutting and bridging, would have been necessary. Beyond the town of Hsiangchi there is a succession of precipitous mountains and lofty passes, the lowest of which is 800 feet and the highest 4,000 feet, and thence to Wanhsien the mountains stretch down to the Yangtsze like the teeth of a comb, the cost estimated by the Chinese to overcome these difficulties being Taels 38,500 a li (about one-third of a mile). The tunnels found to be necessary not far from Ichang were bored, while work was started on two some fifty miles out, one being 6,200 feet long and another 1,000 feet long. Altogether two tunnels were completed and eight others were started, 1,500 feet of the long tunnel having been driven when work ceased.

The river as far as Wanhsien skirts between the edge of mountainous country, split in every direction by gorges and chasms, vertical cliffs of coarse conglomerate towering a thousand feet above the water. The eighty miles between Ichang and Kweichow is, of course, the great gorge region, the rapids commencing 15 miles above Ichang. The hills generally lay north and south right across the route of a railway. Above Wushan, just over the Szechuan border, the mountains recede a little, but at the Windbox gorge, the furthest upstream, and perhaps the most picturesque, the cliffs are not inferior to those below, but the hills again recede and the river opens out into a broad reach at Kweichow. The mountains then run in a north-easterly and south-westerly direction being of peculiar formation and broken by cross ranges, with coal and iron seams visible in many places.

Salt Junks at Tsungyang Custom House, Kweichow, Szechuan

A cargo junk descending the Tchin Tan Rapid, Upper Yangtsze

Mr. Randolph, the acting Engineer-in-chief for the American section, endeavored to discover a route calculated to escape the difficulties presented on the Chinese location and eventually succeeded in doing so, finding at the same time a much shorter line, though the work to be done on his route will still be heavy. Between Ichang and Nantu there will be about 22,000 feet of tunnelling to say nothing of the bridging and the almost continuous cutting, and between Nantu and Kweichow in Hupeh the tunnelling will amount to between 12,000 and 15,000 feet, while the bridging will be much less than on the preceding section. The survey of the first section was to have been concluded in January, and if the report is favorable the route upon which the Chinese engineers worked will be abandoned.

Probably the Ichang-Kweichow section of this line is more difficult than what succeeds, but the two hundred and more miles to Chungking will give the engineers ample scope for displays of talent and ingenuity in overcoming the problems which nature has managed to set in her effort to isolate this rich province from the outer world. The existing road between Kweichow in Hupeh province to Kweichowfu in Szechuan, follows the river to Patunghsien, and then branches north-west over passes reaching 5,500 feet at Tachang, 3,300 at Taninghsien, till it is about 30 miles from the Yangtsze and then turning at right angles goes almost due south to Yun-Yanghsien (1,000 feet), at the junction of the Wantungho, an affluent, with the Yangtsze. It then follows the river for about 30 miles to Wanhsien (600 feet), and leaves the river, which comes from a south-westerly direction, going nearly due west at an elevation from 1,000 to 3,400 feet to Liangshanhsien (1,650 feet.) The road, which runs through innumerable villages and some cities, keeps about 40 miles from the river, the elevation dropping between Liangshanhsien and Tienkianghsien (1,350 feet.) For thirty miles it goes due west to Linshuihsien (1,170 feet), and drops due south to Kiangpeiting—on the opposite bank of the river from Chungking. The elevation from Linshuihsien to Chungking is about the same 1,170 to 1,600 feet, and sloping near the river to 750 feet. Chungking is the first objective of the line, for it is the largest commercial city in the province and is the port where all the commerce concentrates. All the trade from the Chengtu plain and from along the Yangtsze and its feeders to the south-west come to Chungking. The city is splendidly situated, on a spit of land at the junction of the Kialing-ho with the Yangtsze, for waterborne traffic, but the Kialing river makes a bridge of some importance necessary to bring the railway to its portals. As the line from Yunnan is to come from the west the river has to be bridged, so Chungking gains by that especially as there is a possibility of a line to Chengtu being continued on from Linshuihsien, 60 miles before Chungking is reached.

The construction of a railway along the 299 miles between Chungking and Chengtu, though the country is more or less mountainous until the Chengtu plain is reached, offers no extremely grave difficulties. Soon after leaving Chungking a region is entered which is well supplied with waterways and canals which may affect freight possibilities. The main road between the two cities is described as one of the best in China, being paved with stone slabs, and is a constant avenue of traffic. In what is called the Red Basin is one of the richest regions in the whole world, and perhaps the most densely populated, for its 70,000 or 80,000 square miles carry 50,000,000 people intelligent, industrious, thrifty and commercially progressive, any railway between any two cities should pay. Every valley is under intense agriculture, hillsides are terraced and cultivated to the summits; throughout the length and breadth of it—an area almost that of Belgium—there is not a road which would carry an ordinary wheeled carriage or wagon; the wheelbarrow is the only wheeled vehicle used, and as Colonel Manifold says, "in these days of severe industrial competition it seems almost incredible that a country with this enormous population and natural advantages should be allowed to remain without a railway when even the local traffic from town to town would have been sufficient to make one pay."

The system of irrigation on this plain, which enables it to support its 50,000,000, is remarkable, and earned for Li Ping, the Chinese engineer who created it, the rank of "first gentleman," and secured for him the erection of commemorative temples throughout the length and breadth of the land. Crops grow one after the other with amazing rapidity, says Mr. R. Logan Jack, and, as many as seven successive harvests can be

A Rope Suspension Bridge, near Kweichowfu, Szechuan.

made in the course of a year. All manner of fruits and cereals grow in abundance, and the fields which were once blooming with poppy for opium production now are covered with waving wheat. Peaches, apricots, plums, oranges, lemons, pears, apples, mulberries, persimmons, cabbages, lettuces, kale, turnips, endives, carrots, cucumbers, melons, peas, beans, pumpkins, millet, barley, rape, maize, oats, buckwheat, wheat, and sugar-cane are among the products. Water for irrigation is lifted from the natural and artificial streams by chain-pumps or huge bamboo waterwheels, and bridges of quaint and picturesque appearance abound on all sides, the natives appearing to have "anticipated most of the finest conceptions of modern engineering;" bridges are camel backed, hog backed, level decked, and arched in all sorts of styles, and made of wood and stone. Industrially the natives are strenuous laborers, mining coal, copper, zinc and other ores with primitive methods. The chief industry is that connected with the preparation of salt*; great brine deposits are situated about the centre of the Red Basin, but in the east and other parts of the province wells are also worked. At Tzu-liu-ching natural gas is used for boiling the brine, while coal is the fuel in other places. The wells from which the natural gas emanates have never been worked for petroleum, but, in the words of Sir Alexander Hosie, "the stench which permeates the whole town reminds one forcibly of a gasworks." In the future these wells may yet be of great account in the world's oil supply.

Typical views on the Yangtsze

Photos by Capt. T. C. Fitzhugh, M. V. O.

The plain immediately about Chengtu, some 70 miles in length by 30 in width, is naturally of great wealth and prosperity, and contains many populous cities, the great highway leading to the capital from Pengshanhsien, on the Min river, being, for a distance of forty miles, "like one long street lined with houses."

Chengtu itself is a splendid city, encircled by walls 30 to 40 feet high, and about 12 miles in circumference with a population set down by Richtofen at 800,000, while the Chinese claim 1,000,000. The streets are broad, paved, and lined with rich shops, stocked with silks, furs, silver ware, etc. A big commerce is done in the city, which can be reached by large boats from the Min river during six months of the year, and smaller ones during the remaining months. Once a railway reaches Chengtu it will not be long before lines are run out to the surrounding regions to tap the large and important producing centres that exist on all sides.

If the road direct from Chungking is taken to Chengtu for the railway there is a choice of two routes fifteen miles from Chungking, the shortest one going direct to the capital through Pishanhsien (1,150 feet) Tatsu-hsien (2,500 feet), Anyohsien (1,170 feet), Lochihsien (1,640 feet) and Kienchownan (1,330 feet).

Colonel Manifold in reporting on the result of his investigations with the object of establishing railway communication states that "unless this planet were to stand still this naturally rich province must advance with the rest of the world. But Szechuan must first be opened up from the east and the increased prosperity which rapid and safe means of communication will bring to this province will cause new outlets to be sought and these will be in the direction of Yunnan. The importance of this line from the lower Yangtsze rests not only upon its being a sound undertaking financially, but also on the fact that it will become the centre from which will radiate the great system of railways stretching from the Indian Ocean to the North China seas."

From Lamchow, on the South Coast, to Yunnanfu

The most important railway which is projected for construction into Yunnan is the one for which the rights have been given to the new Banque Industrielle de Chine. It is to run from the little known port of Yamchow, west of Pakhoi, to Nanning, then through the Yu-kiang valley to Yunnanfu, and onwards into

*In the FAR EASTERN REVIEW of December 1912 a full description of China's salt deposits and a history of the Salt Gabelle was given, including Sir Alexander Hosie's reports on the Szechuan wells.

Szechuan, Chungking being the terminus, an approximate distance of 1,200 miles.

The route up the valley of the West River has always been the natural one into Yunnan for all south-China trade. and many different officials and merchants have from time to time urged the building of a railway at least from the head of navigation at Poseh across the mountains to the Capital of Yunnan. In 1899 a Chinese named Tangkiao worked up an agitation with this object in view, his arguments for a railway being stressed by the building of the French line from Tonkin to Yunnanfu. Tangkiao, in a petition to the Viceroy, set forth the claims of the his proposed line, both from a strategical and commercial point of view, so strongly that he was able to stir up action. He insisted that the line was a necessity since the French railway was pushing north from Tonkin, and the British were talking of a railway from Burma. "What we need," he wrote, "is a line which will be of commercial use and enable us to defeat the French." A line from Yunnan to Poseh and on to Nanning, in particular, would enable the Chinese, he said, to secure the traffic from Yunnan; would develop the rich mineral resources; would expand and cement close relations with China's most commercial province, Kwangtung, and would, in the event of a war with France, permit of the rapid movement of troops to Yunnan, Kwangsi and Kweichow. As a result of this agitation the Ministry of Communications in 1911 sent Mr. K. S. Low, one of their best engineers, to survey the line from Poseh to Yunnan, and to communicate his report to the Viceroy. His instructions were to avoid branching from the French railway, and the line he located to comply with that order is described later. The revolution prevented anything

Map title: FRENCH RAILWAY INTO YUNNAN FROM TONKIN

tangible springing from the scheme so far as the Chinese gentry and merchants were concerned. They could not raise the funds; so the matter was, in May, 1912, again brought to the attention of President Yuan Shih-kai, who replied to the Yunnan Tutuh that he had not overlooked the importance of the project and that he had instructed the Ministry of Communications to study the question and furnish him with a report. The Tutuh of Kwangtung also brought the matter up, and, later, the Ministry of Communications despatched two Chinese engineers to make a report to supplement that of Mr. K. S. Low, the President notifying the Yunnan Tutuh that as soon as these engineers made their report he would publish the regulations for a Chinese Company to carry out the work. The President also urged the Tutuh to see that the Tutuhs of Kwangtung, Kwangsi, and Kweichow, in conjunction with Yunnan, could have the necessary capital raised, adding that the Central Government would supervise the enterprise. The two engineers were despatched in due course, and arrived at Yunnanfu in the summer, where they worked with Mr. W. S. Dawley, who had been engaged by and was surveying for the Yunnan Railway Company, which had subsequently dissolved. The Tutuh displayed a keen interest in the work, and the Yunnan Railway Bureau was organised. The appointment of Dr. Sun Yat-sen to undertake the construction of future railways rather embarrassed the Bureau, but in 1912 it advised the Tutuh to proceed with the building of the line, a matter which was later on referred to Dr. Sun. The Tutuh replied to the Bureau on the strength of advice that the line to the Kokiu tin mines from Mengtsze should first be built, but the Bureau responded that, if it were desired to build but a short section of railway, a line should be run from Yunnanfu to Yanglin, which would later serve as the base of a line to Poseh and one to the Yangtsze, the proceeds from the former being probably sufficient eventually to enable the Yunnan-Szechuan line to be built by the Chinese. The small line to the tin mines would, the Bureau argued, be but a feeder to the French railway, and that they did not desire to construct since the building of that line would be working for the benefit of French interests.

Mr. K. S. Low (Low Kuo-sui)

For the reason that sufficient capital could not be raised this scheme fell through, and the next heard was that the Tutuh of Yunnan was negotiating with a German firm to have the line built. The French at once became active, for they had certain claims, and the German hopes—if there ever were any—were blighted, for the French Minister in Peking rightly became alert in support of his nationals and managed to have two birds killed with one stone. He secured the line from Yamchow to Yunnanfu and from Yunnanfu to Chungking.

Most talk of the former proposal has centered round a termination at Pakhoi, and it came as a surprise to the public when it was announced that Yamchow had been selected. But there were good reasons. Yamchow has a natural harbor, said to be deep enough to float sea-going vessels, and has the additional advantage of being sheltered by hills from the typhoons which occasionally sweep over this region. It will have to receive some attention to make it fit for a port, but that is said to be an easy matter. The northern pronunciation of the name of this town is Chin-chow, and on some maps that rendering is given instead of the southern one of Yamchow. In the Ching dynasty the military Taotai of the territory resided there; and the locality used to be famous for the four hills of Anking, Chutze, Chungjen and Shihwan which are near by. Two rivers debouch in the harbor, flowing past two sides of the city, and they bring down a certain amount of trade, articles exported being sugar, indigo, tobacco, rice, medicines, pearl-shell, coral, silver, gold, and coal. The mountains offer no distinct difficulties to railway construction, and the route of the projected railway will probably follow the trading road to Nanning, which city is entered over plain lands, the valleys en route, being cultivated.

Since Nanning superseded Kweilin as the Capital city of Kwangsi province it has increased in importance. Its situation on the West River (or Sikiang) just below where it branches to the south-west towards Lunchow in Tonkin, and north-west to Yunnan, is advantageous to it as a distributing centre. It is on the north side of the river, and if a route is located for the railway on the southern bank there is a likelihood that it might be found expedient not to connect directly with the city since the river is wide at the place and bridging might not be worth the while. Nanning is a walled city and was declared open to foreign trade in January, 1907. Its growing importance can be gauged from the fact that in 1912 the total value of the trade passing through the Customs Office was Hk. Tls. 7,033,825, an increase of about 30 per cent. above the highest figure on record. Exports as well as imports showed enhanced progress. The principal exports were beans, canes, dried lizards, medicines, brown and white sugar, ground-nut cake, paper and aniseed. The bulk of the carrying trade is now done by motor boats. The journey from Wuchow to Nanning by boat occupies about twenty days, but the motor boats make the round trip between Wuchow and Nanning in six days.

The character of the country on the West River alters about Nanning, the hills giving way to plain close by the city, but cultivation is not generally so heavy as the river is ascended as might be supposed. In this regard, Mr. Archibald R. Colquhoun, writing in 1883, says "To arm-chair projectors, who, studying some imperfect map of China at home, may fancy that alongside this waterway of the West River there must exist a teeming population living on enormous cultivated plains on its banks, it is the duty of the truth seeking and truth-telling traveller to dispel the illusion. The province of Kwangsi, compared with other provinces of China, is mountainous, bare, and barren, thinly peopled and with only a small area which is cultivable—this being where the river bank here and there spreads out into small plains; and these become fewer as one travels westwards. Surprisingly small as the amount of cultivable land is in this huge province, which (like Kwangtung the neighboring province) is of about the area, roughly speaking, of Great Britain, the thinness of the population is all the more remarkable. All the land which is culturable is by no means under cultivation—as is the general impression in regard to China—and this shows the paucity of population relatively to the enormous area of the province." Mr. Colquhoun writes, of course, with his voyage from Canton in his mind, and what he says shows the wisdom of the Chinese in wishing to cut down from Nanning to the best port near at hand rather than prolonging the railway in competition with the river right through to Canton as used to be urged. It is, of course, logical for the Chinese to wish to have their own port to compete with Haiphong, and it is wise for them to shorten the railway journey from Yunnan to the sea if they hope to develop a large freight traffic, as no doubt they do. No better port than Yamchow is available. Although Pakhoi has long been an "open port," it has not the harborage facilities. It is an open roadstead, at which steamers are compelled to lie a mile from the beach, and all cargo handling has to be done with lighters and junks, which often cannot, owing to the state of the weather, carry on the loading. Yamchow, it is hoped, will overcome these disadvantages, but it will not destroy the trade of Pakhoi. Certainly the railway, if built, will derive more advantages from having its seaport at Yamchow than at Canton, as has been urged, and if the

coal in the vicinity develops necessary qualities for manufacturing purposes who is to say that Yamchow will not yet spring into an important industrial centre where the minerals of the hinterland might be transformed into useful materials for shipment to other parts of China and abroad?

All the regions which a line from Yamchow to Yunnan and Szechuan will tap are rich in minerals, as has been said before, and, as has been shown, the chief reason for neglect properly to mine them is the lack of transportation. The only means of transporting products from Yunnan by the West River route is to have them carried on pack mules or coolies' backs over long distances, and then float them down stream to Nanning in small boats. The traffic is attended by so many difficulties that it is impossible for it to develop as it should until a railway is constructed. Already, however, there is a steady trade in the staples already mentioned, which are brought down from the country to be shipped from Nanning to Canton by the West River. The head of navigation on this river is Poseh and any railway to Yunnan must pass through the valley of the Yuh-liang to this port. The country alternates between mountains and low lying plains the ascent being gradual but not anywhere near as difficult as the passage up the valley of the Yangtsze into Szechuan. Open country obtains for a short distance from Nanning and gives way to low, bare undulating country dotted with small villages, and later the river runs through walls of lime-stone with queerly serrated ranges in the near and far distance, now rushing through grim narrow gorges, again breaking into "a splendid vista of champagne country, undulating and verdant, lying on either side of a long straight reach." Above Hangan the limestone ranges press closer to the river, their picturesqueness being attractive to the tourist, but their formation disconcerting to the engineer. West of Shung Lamhu, however, these grotesquely shaped mountains disappear and fields of corn dip to the river's edge, the country being cultivated for extensive areas, the hills in the back ground rolling, away in easy undulations. Practically to Poseh where red sandstone bluffs touch the river, the country is cultivated, the level to the serrated hills being broken by rounded knolls, villages being noticeable at varied intervals.

A rough section of the Yunnan-Tonkin Railway

Poseh is the trading centre for Yunnan and Kweichow so far as southern China is concerned. It is situated at the junction of an affluent with the main river and is built on rising ground. It always maintains a busy air, the junk and sampan fleets generally being large, while the overland trade combined with the tile and pottery works in the vicinity give it a thriving and busy appearance.

From Nanning to Poseh no actual survey has yet been made, but a rough estimate of cost was prepared two years ago by Mr. K. S. Low at the instance of the authorities. He advocated that no railway be built between Nanning and Canton, but between Nanning and Hengchow, and thence south to Pakhoi, the only port on the coast in general use. Between Poseh and Nanning Mr. Low estimated the 150 miles of country to be two-thirds level and one-third hilly, the cost of constructing a line over which would be Taels 75,000 per mile on the level country, and Taels 100,000 on the hilly, or, for the whole length, about Taels 12,500,000. His total estimate for the line between Nanning, Hengchow and Pakhoi was about Taels 11,500,000

From Poseh to Yunnanfu an instrumental survey was made by Mr. Low, and a reconnaissance over two routes was carried out by Messrs. W. S. Dawley and Arthur J. Moore-Bennett. Near Poseh the country along the river is flat and highly cultivated, but three miles away precipitous cliffs abound, rising up to 200 feet above the river with the strata dipping ten degrees to the horizontal. Hills later slope down to the water's edge and continue so, being covered with timber and bamboo groves.

The city of Yunnanfu is surrounded by a fine brick wall, 30 feet high and measuring about 4½ miles round. As is generally the case, a very large part of the population live in the suburbs, which extend to a considerable distance round three sides of the city. Yunnanfu stands at a height of 6,700 feet and its climate is never hot, 85° in the shade being about the maximum summer temperature. Although there are frosts in winter no very severe weather is ever experienced. The population is estimated to be 80,000. Yunnanfu can boast of a new modern gaol; a Government medical school and an up-to-date arsenal.

Mr. Low commenced his survey in the spring of 1910, fixing the elevation of Poseh, at 1,000 feet above the sea level. Except for the divide between the West and Red Rivers easy grades were found along the course of the river over the western corner of Kwangsi province. The country passed through was thinly populated and not very productive, the population being chiefly of the Maiotze tribe, who have, it may be incidentally mentioned, solved the suffragette problem to a nicety. The man minds the baby while the woman works in the field. If the man has several wives the comely ones go to market and do the trading while the plain ones labor with the hoe and the reaper. When the railway goes through the section—if it ever does—the navvies will be the womenfolk of the country, if there are sufficient of them to be spared from their farms.

No difficult country was encountered up the river valley, but at the crossing of the Red River, which here constitutes the border of Kwangsi and Kweichow provinces, serious obstructions began. A reconniassance of the Red River to a point about 115 miles from Poseh showed that the river could not further be profitably followed, tremendous gorges barring the way. The trade route leaves the stream and strikes to the plateau of Shingyi, the elevation rising in about ten miles from 1,989 feet to 4,913 feet,—a rise of 2,924 feet. A range of mountains running approximately east and west was cut through by the Red River, and in this section not even a footpath could be found. Exploration of the Kweichow territory in the vicinity and the adjacent region of Yunnan yielded nothing in the shape of an easy passage, the passes being high and the gorges impossible, so the engineer decided to climb the plateau of Shingyi instead of following the river route, a determination which was only come to after three months' active reconnaissance of a country through which the drainage percolated into the hills, streams flowing through subterranean channels rather than on the surface, and issuing at the foot of hills through holes varying from a foot to thirty and fifty feet in diameter. The range running east and west drops almost abruptly to the valley of the Red River, all the drainage of the Shingyi plateau percolating through it, but being an open slope it is possible to climb it easily, a grade of from 2 to 3 per cent. being obtainable.

From Shingyifu (130 miles from Poseh) Mr. Low located his line approximately along the trade route to Shingyi-hsien (175 miles from Poseh), a great centre of trade for Kweichow and Yunnan and the Canton provinces. In the palmy days of opium the trade centred at this town and millions of dollars were sent there yearly to make the purchases, foreign and other

merchandise following to recapture the silver. The prohibition of opium-growing has destroyed the superficial prosperity of Shingyi-hsien, and the region, and the poverty that has been caused is distinctly noticeable, though the farmers are now planting wheat and other cereals. Old women and young girls, men and boys, are constantly encountered without sufficient clothing to wear, though they have abundant food, the plateau being rich and productive. The difficulty is that there is no market for the grain, and consequently the opium has not yet been replaced by anything which will enable the producers to secure the wherewithal to purchase the cotton yarns, the piece goods, and the materials which they were wont to buy when opium was such a profitable, easily-handled crop. A railway will be the saving of this large rich wheat and grain growing region, and, since the climb from the Red River was practicable, immediately to tap this plateau, it was one of the strongest reasons which influenced Mr. Low to carry his line that way rather than pursue the Red River with all its precipitous gorges, almost impossible locations, and at the same time, much longer route. The staple food of the people of this part of the country is rice and native corn.

After traversing the plateau in Kweichow province the line crosses the Red River valley into Yunnan province, and proceeding up one of the branches of the Red River is able to take advantage of a rich level stretch, affording easy construction. As a range of hills divides this stream from Loping (230 miles from Poseh) that city will not be touched. Not only do the hills isolate Loping but they break up the rich valleys and compel a line to be located through gorges and along stiff hillsides, the streams in many places disappearing and flowing in subterranean caverns through the ranges, the entrance and exit of the water being separated in some cases by as much as two or three miles. Happily, a side stream was discovered through the valley of which a line could be built without high grades or much tunnelling. Thence to mile 230 from Poseh the route passes through comparatively level country. Notwithstanding that the country from this vicinity is most difficult, topographical advantages offer and by these it is possible to escape from the difficulties. At Tek Lai-po, (280 miles from Poseh), near the source of a branch of the Red River, the location leaves the valley of the Red River and crosses a range into the valley of Kutsingfu. The range runs approximately east and west to I-ling, on the French railway, but as Mr. Low's official instructions were to select a route obviating the necessity of junctioning with this railway south of Yunnanfu, he decided, after carefully traversing and examining the range to the existing railway, that the spot chosen for the crossing was the easiest discoverable. In this section the mountains are most precipitous, the surveying party being compelled in many cases while searching for an easy crossing, to steady their slipping mules down descents by hanging to their tails. Round Teh Lai-po coal exists in abundance; it has no value; walking on the highway lumps are stumbled over; when the native wants to revive his fire he walks into his back yard and digs the fuel; a mule load can be purchased for 50 cash, and in the city it is sold for a little higher price. The country is dotted with crude charcoal furnaces and blast furnaces 15 to 20 feet high; iron exists in abundance, the hills being denuded of timber to supply the charcoal for the smelting; wrought iron is sold in blocks, and from this the natives have been long accustomed to make their household and farming implements. Once opium thrived; now corn replaces the erstwhile blooming poppy, rice being cultivated in the lowlands; but lack of communication with a market deprives foodstuffs of its value. The country being too cold for cotton cultivation, clothing is scarce, though the natives in the hills grow hemp from which to weave coarse garments. The valleys are cultivated by Chinese, the aboriginals living in the mountains, the Chinese being mostly descendants of the soldiery engaged in the conquest of Yunnan, men who originally came, according to their descendants, from Kiangsu and Hupeh provinces. The aboriginals, speaking a different tongue, having different customs, mix very little with the Chinese, nor do they contribute to the development of the territory which they occupy. Agricultural and industrial effort is confined to the Chinese, but they exist in sufficient numbers in the cultivable valleys to provide a nucleus for much trade in the event of railway communication being opened.

Pumping Brine from Lighters at Suifu, Szechuan

Upon crossing the range the route lies along the valley of the Kutsing river, which is one of the richest valleys of the Yunnan province and which extends for a hundred miles from Kutsingfu (304 miles from Poseh) in one direction to I-lang, on the French railway. Here the river, like many others in China, flows in a bed higher than the surrounding country, being confined by high banks, which the Chinese are constantly increasing in height to prevent overflowing, instead of deepening the river. If the Chinese would realise that one cubic foot of silt taken from the bed of the river is worth ten cubic feet of soil placed on top of a dyke

On the Weining Plateau

they would avert many a disaster, and this fertile valley is now threatened by this miniature Yellow River which purls its elevated way along it. Yunnanfu derives much of its agricultural produce and fruit from this valley, all varieties flourishing in abundance.

At Kutsingfu Mr. Low's survey was stopped by the revolution, but as the remaining distance to Yunnanfu had been surveyed by Major Davies, the description of which is given later on, there was scarcely any need for a second survey to be run over the same route.

Mr. Low, had three parties at work to conduct his survey and in his report he provided an approximate estimate of costs, placing the total from Poseh to Yunnanfu, about 435 miles, at Taels 51,000,000, which, added to Taels. 23,500,000, the cost from Poseh to the coast, would give an approximate total of Taels 74,000,000 from the sea to Yunnanfu.

A route estimated to cost £5,640,000, from Yunnanfu to Poseh, and a route different from that surveyed by Mr. Low, was reconnoitered by Messrs. W. S. Dawley and Arthur J. Moore-Bennett, but their line starts from a point on the existing French line south of Yunnanfu, taking off at I-lang, and therefore handicaps it by having a terminal in the hands of what would be a competing company. This survey is mentioned in the article appearing in another column from the pen of Mr. Moore-Bennett, and while the writer claims for it a cheaper cost it is questionable if it would serve the purpose of the Chinese as well as a line running further east and tapping Yunnanfu from a direction different from that occupied by the French. The French line follows the only available route from Yunnanfu southwards, the rugged mountains preventing any wide divergence, though the Chinese could, of course, build their own line parallel with the French one to I-lang, if they so desired, and if protests did not emanate from the French Company holding the rights of the line from Yunnanfu to the sea in Tonkin. That they would protest is certain since any line from Yunnanfu down the West River valley to the south-China seaboard would kill their Chinese goods and passenger traffic. For this very reason, too, it is more than probable that the French are not likely to take any early steps to float a loan to China to establish competition with the French owned line in Yunnan that would certainly prove disastrous. The fact that China has given the agreement to French capitalists will deprive her for some time of a line which she ought to have into Yunnan unless she is able skilfully to play her cards, or bring some sort of pressure to bear to have the agreement brought into effect. The French raison d'etre of the agreement was twofold, first to obtain the right to the line from the south coast to Yunnanfu, and thus prevent any nation from securing it, and second to obtain the right to the line from Yunnanfu to Szechuan, a line that will be built if possible, and if other nations do not successfully oppose it, in order to give France the domination she requires and also to benefit the line already existing. France aims at securing the handling of all trade south of the Yangtsze, and she could easily do that did the railway company not act so injudiciously with regard to freight rates.

From Yunnanfu to the Yangtsze

Although the route between Yunnanfu and the Yangtsze has been much travelled, and has been the subject of preliminary reconnaissance by Major Davies and Mr. Dawley for a feasible railway route, the fact remains that the wild mountainous character of much of the country demands closer attention before a line can definitely be decided upon. Major Davies sums up the investigations of his party in favor of a line through Weining, reaching the Yangtsze at Suifu, 1,500 miles from the sea, the alternative route from Weining to Nachi, opposite Luchow, being so difficult and through such intricate country, that rack lines of 1 in 16 and 1 in 12 would be necessary, though the last

Ferry over the K'o-tu Ho, in North-western Kweichow

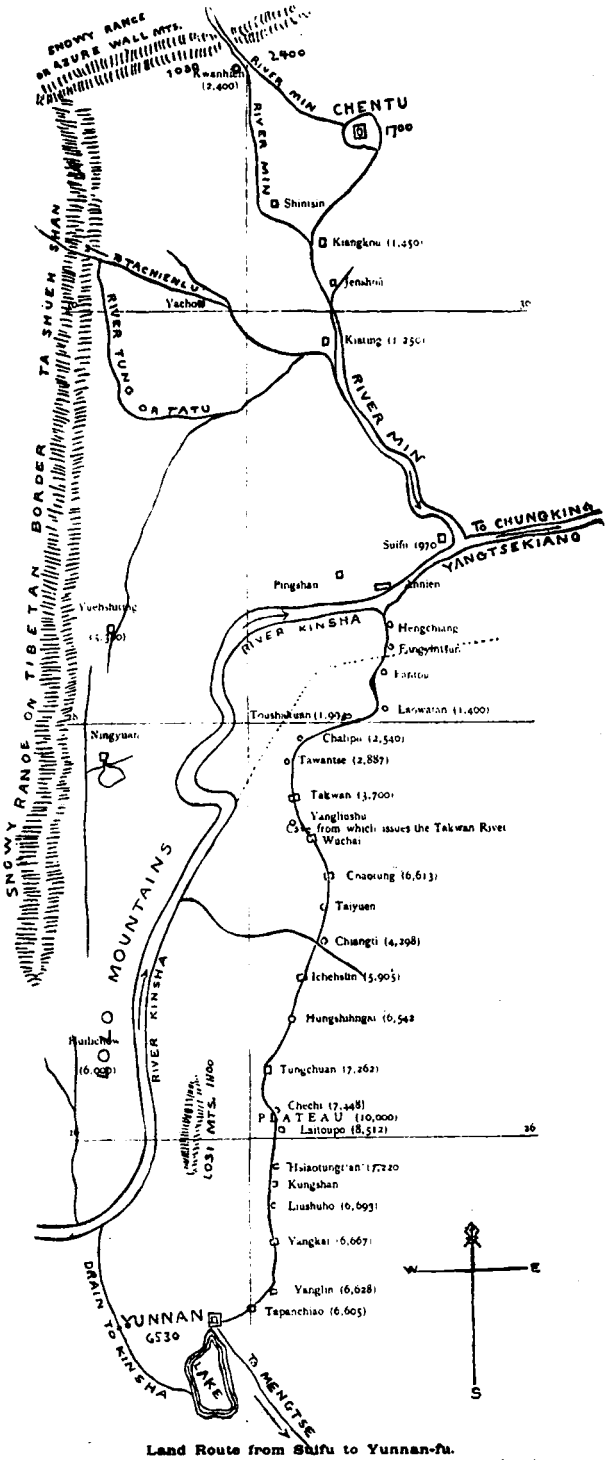
A Valley in Yunnan, near Chaotungfu

fifty miles to the Yangtsze would follow the Yungning river and be comparatively easy. The thought of a rack road is sufficient to put this route out of question, and until more is learned by close investigation by surveyors it must be discarded in any discussion on the subject. Major Davies, therefore, marks down as possible a line from Yunnanfu, through Kutsingfu, branching north-westwards from Weining, through Chaotung to Suifu, but in that there are very steep ascents giving grades as steep as 1 in 25. For the first fifty-five miles from Yunnanfu the road passes over rolling plains, but from the north end of the Suanwei plain a line would be difficult for 70 miles, with steep gorges to negotiate. Beyond that to Chaotung the road is fairly easy, but further on difficult gorges have to be traversed down the course of the Heng river to Takwanlao, over a hundred miles from Weining. On the lower part of the Heng river the road is fairly easy for the next 90 miles to Suifu, the Yangtsze river being crossed by a bridge at Anpien, some 15 miles south-west of Suifu, 425 miles from Yunnanfu.

The present traffic from Yunnanfu to the Yangtsze is carried over one of two main roads, one passing through Tungchwanyun and Chaotungfu to Suifu, and the other running along the telegraph line through Kutsingfu, Suanwei and Weining, striking the Yangtsze at Nachi. On the way from the capital across the Yunnanfu plain the traveller is impressed by the rows of cypress trees growing along the embarkments of the irrigation canals, by the hand wheels used to lift the water from lakes and ponds, and by the small carts drawn by a bullock or a buffalo, not for the purpose of transportation, but for farming operations. Two days journey from Yunnanfu the Yiliang plain, lying at 5,300 feet—an exceptionally low one for this part of Yunnan—is reached, and the third day a large plateau with an elevation averaging 6,000 feet is ascended. Two days and a half over gentle undulations through bare and dry country, bearing poor and scanty crops; traversed everywhere by carts; marked by peculiar pillars of sandstone rising 20 feet in the air, brings the traveller to the north end of the plateau where it precipituously descends to the Kutsing river. A fine thirteen arch stone bridge, 120 yards long, crosses this tributary of the West River and permits a dry shod entrance to Lu-liang, a poverty-stricken town, but with a reputation for scholarship. One of the finest plains in Yunnan, extending for over fifty miles with an average width of about five miles, is traversed to Kutsingfu. The northern portion is very fertile, while the south is not so well irrigated and crops are poor. Northwards further undulating country is crossed, marked by a series of little cultivated plateaux, with low rocky hills raising out of them, and most of them without any running water. Coal is plentiful and hardly anything else is used as fuel, 200 cash a cartload or about Mex. $1.50 per ton, being the selling price.

Coal mines which might be extensively worked if better means of communication are supplied have been opened all around Suanwei. Two days march further north copper is also mined in many places. Steep hills are ascended and sharp descents traversed before the Ko-tu river—1,000 to 2,000 feet lower than the neighboring valleys,—is reached. It is the longest source of the West River, and marks the boundary of Yunnan and Kweichow provinces. Dry hilly country marks the way to Yaochan, where copper is mined out of the solid rock, caves being cut in the hill-sides by the miners. There are no deep shafts, the miners working with hammers and wedges, and producing an average of a mule load of ore in two days. The

Country near Chaotungfu, Yunnan



Land Route from Suifu to Yunnan-fu.

Suifu to Szechuan Border	4	stages	60 mi.
Szechuan Border to Laowatan	2	"	20 "
Laowat'an to Chaotung	6	"	132 "
Chaotung to Tungchuan	5	"	107 "
Tungchuan to Yunnan-seng	7	"	152 "
	24	stages	471 mi.

10 mi.

ore varies a good deal in quality, and sells at about 25 cents for 100 lbs. the best being said to produce 10 per cent. of copper. The copper is sent to Kweiyang, the capital of Kweichow Province, where it is minted into cash.

The hill tops in this part of the country rise to 8,000 feet and form the water shed of streams which feed a large lake near Weining, a poor town with an elevation of 7,500 feet whose importance lies in the copper, silver, lead, iron and zinc mines which abound. The people in the region showed much hostility to Major Davies' surveyors, rolling stones down upon them from the mountain heights, and shooting at them, but always running away if chased by the surveyors. Boilers and mining machinery had been bought and transported to this place by the Yunnan Government but never used, copper mining on an elaborate scale not paying on threepence per pound, the price given by the Government for the product.

The route thus far, judged from the point of view of railway construction, may be described as difficult. After leaving the Suanwei plain an intricate mass of mountain chains is encountered, while, to make matters worse, right across the route which the railway must follow, runs the Kotu river, 1,500 to 2,000 feet lower than the neighboring valleys. Captain Watts-Jones, one of Major Davies' party, reported that the country would be quite impossible for a railway were it not for one feature—the valleys are flat at the bottom and fairly broad, generally 50 to 150 yards, and seem to have no sudden drops. The stream spreads over half of the valley but is always very shallow, and fields a foot above the stream seem to escape serious flooding. Taking advantage of this conformation of the ground the surveyor was able to find a fairly practicable route, chiefly following the river valleys to Weining (7,500 feet.)

From Weining, 225 miles from Yunnanfu, two different routes were reconnoitered to the Yangtsze, one via Pichieh to Nachi, and the other via Chaotung to Suifu. Along the first route the country is extremely difficult between Weining and Yung-ning. Some very heavy gradients are necessary to get over the ranges of hills, and the river valleys, often running through steep-sided gorges, do not lend themselves to railway construction. For a few miles rack lines on 1 in 16 and 1 in 12 would be necessary. Should it be advisable to adopt this route the work would be very expensive. From Yung-ning, fifty miles from the Yangtsze River, the work of construction would to comparatively easy with no very steep gradients.

The route via Chaotung, would, as far as that city from Weining, lie over open rolling downs, and there is only one difficult bit, where at Taotienpa an affluent of the Niu-lan river has cut out its valley below the level of the Chaotung plain.

From Chaotung onwards the line would have to follow approximately the main road, that is to say, it must cross a low pass at the head of the Chaotung plain, and thence follow down the banks of the Heng Chiang to the Yangtsze. The upper part of the Heng is decidedly difficult, with a bad gradient and very steep side-slopes. Mountains tower on all sides. Lower down, the valley gradually improves for railway building, and where it debouches at An-pien there is a good place to bridge the Yangtsze, and from there on to Suifu is fairly easy.

Coal and minerals occur throughout this region and near Suifu, coal is mined high on the cliffs above the river. According to Capt. Thos. W. Blakiston, it is practically straightway shipped into junks from the pit mouths. His description of the operations shows that "having to be got at a great height up in the cliff, very thick hawsers, made of plaited bamboo, are tightly stretched from the mouth, or near the mouth, of the working gallery, to a space near the waterway where the coal can be deposited. These ropes are in pairs, and large pannier shaped baskets are made to traverse on them, a rope passing from one over a large wheel at the upper landing and down again to the other, so that the full basket going down pulls the empty one up, the velocity being regulated by a kind of brake on the wheel at the top. At some places the height at which the coal is worked is so great that two or more of these contrivances are used, one taking it to a landing half way down, and another thence to the river. The hawsers are kept taut by a windlass for that purpose at the bottom."

Mr. Dawley's route leaves Yunnanfu, via Yanglin, Sungming, Tungchwan-yun, Chaotung, Anping and Suifu.

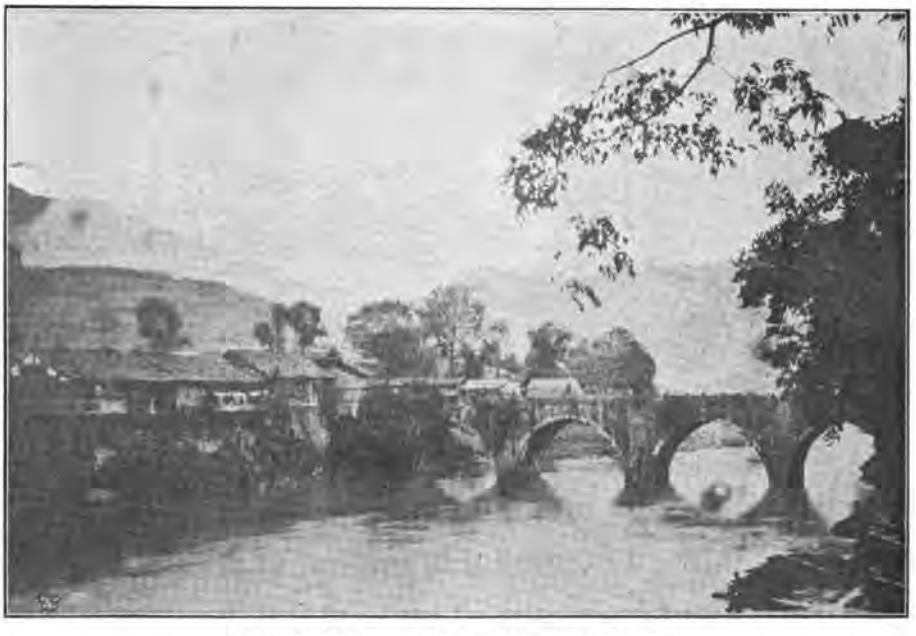
Near Tong-ch'uan-fu, Yunnan

The line would descend from the limestone ridge on which Yunnanfu stands and cross the plain with its limestone pinnacles, serrated ridges, and crags. A paved road over undulating moorland now leads to Yangiin, 7,000 feet above the sea, and 800 feet above Yunnanfu, and leads thence over a great plain of rolling country traversing timber, and mounting ridge after ridge till a narrow valley between high steep mountains ascends to a pass 1,800 feet high. Another 500 feet leads to a plateau studded with rounded hill tops, with ranges in the far distance, cultivation being carried out in the intervening spaces. The crossing of a range 2,000 feet high opens up the plain of Tungchwanyun, a fertile, irrigated stretch, with numerous villages nestling by canals carried between high dykes. Small boats navigate these streams and give intercommunication to the villagers, a poor, hardworking people suffering from the extortion of gentry and officials who own most of the land and who live in comfort within the city walls. The plain gives way to another mountain ridge, the road crossing a pass 9,000 feet high, followed by narrow valleys inhabited by rice-growing Chinese, who occupy comfortable farmhouses. Limestone ridges are ascended in succession, with fertile plains between, till near Chaotung, a suspension bridge of handsome design, with solid brass lions and monkeys at either end, spanning the Niu-lan river, over 100 feet wide, and giving access to Chaotung, a walled city 7,000 feet above sea level. The plain is dry, fertile and rich and is surrounded by rugged mountains, the crops harvested being large and consisting of maize, oats, barley, buckwheat, potatoes, etc. The plain extends ten miles with a width of about twenty, the road eventually climbing uplands on to another plain bordered with limestone ranges, whence a descent is made after crossing the Lohan-ling pass. What is known as the Yunnan plateau is thus left behind for country of quite different character. The difficult road leads between high limestone cliffs, the view from the heights being one of rolling mountains or jagged peaks. A tortuous and difficult descent of the "Corkscrew" pass, a drop of 4,000 feet, eventually takes the road over a handsome suspension bridge 75 feet long spanning the rushing torrent to Laoyatan, a city of 20,000 inhabitants, 2,000 feet above the sea, and 200 feet above Suifu. Cliffs up to 600 feet high, with limestone ranges closing in on the valley, mark the way north to Suifu, the river tearing between precipitous gorges. The road becomes narrow and broken as it leads over steep ranges and eventually passes through spectacular limestone mountains, scarred, serrated and fluted, to Anpien, thirty miles from Suifu.

The bed for a railway could be laid along this route, Mr. Moore-Bennett says, for £7,000,000, there being but a few engineering difficulties, though at times heavy grades.

Suifu (800 feet) is a walled city which handles the transit trade coming down the Min river—navigable for hundreds of miles—from Chengtu and that section of the Red Basin tapped by the tributaries of this important river. It is, too, the centre of an excellent coal area, as well as being considered the head of deep water navigation on the Yangtsze. The region is very mountainous and near here "all the barriers of the western highlands touch on the confines of the Red Basin." The city is a large distribution centre, and is advantageously situated at the junction of the Min and the Yangtsze. Most of the import trade of Szechuan passes via the Min, its affluents, and the numerous canals connected with it. In addition to the exports of wheat, barley, oats, corn, rice, hemp, white wax, medicines, nut galls, pig's bristles, rhubarb, fungus, hides, tobacco, lead, zinc, etc., coming from the Red Basin, it also handles the gold, copper, furs, skins, musk, wool, etc., brought in from Tibet and western Szechuan.

To take a railway to Chungking another bridge would be necessary to cross the Min river, and thence the line would probably pass through Nanchi-hsien to Luchow. One estimate places the cost of building at about Taels 100,000 per mile, this far the mountains not being excessively difficult. From Luchow,



Yachowfu, Szechuan. A Stone Bridge over the Ya River

Near Sui-fu, Szechuan

On the road from Chaotung to Yunnan

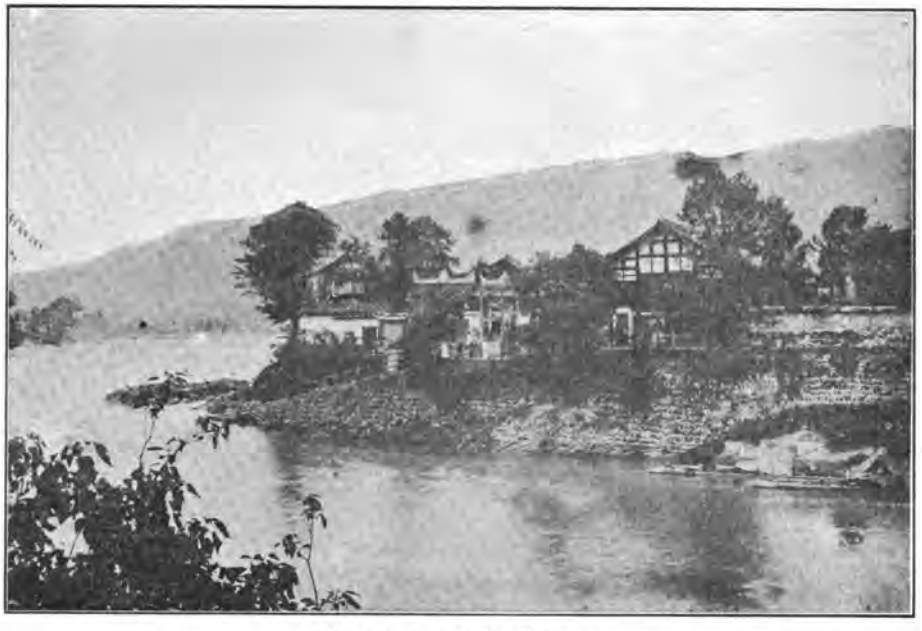
where the Lu river would be crossed, the ranges become more persistent and the road runs north-east to Yungchang-hsien (1,220 feet) about twenty miles from the river, the next twenty-five miles to Chungking being almost due east. The cost of the line from Luchow to Chungking would run probably to Taels 110,000 per mile, or a total of Taels 15,000,000 for the 145 miles.

The railway from Yunnan to Chungking is designed, of course, to give the French port of Haiphong direct connection with the important commercial centre of Chungking, and with Chengtu by the railway to be built by the Hukuang Group. Naturally it would tend to diminish in a measure the traffic which the builders of the Hukuang system hope to derive from their lines. When they planned the line from Hankow to Chungking and Chengtu, they anticipated collecting the trade at both centres and picking up what might come down river by junks or steamers from Suifu and the Min river valley. If the French line to Chungking is built it will, if freight rates are favorable, do much to draw trade towards the Indo-China seaboard, not only from Chengtu, via Chungking, but also direct from Chengtu by way of the Min river. This is an aspect of the matter which has probably not escaped the attention of the Hukuang Group, and realisation of it will very probably compel them to come to some arrangement to have the section dropped by the French even if the line to Suifu is constructed. However, French aims are not likely to be subor-

Coal Gorge on the Yangtsze (Blakiston)

Parrots Beak Mountain, Yunnan

Tea Carriers, Carrying Tea into Tibet, each b n dle weight 250 lbs.



The Ya River at Yachow, Szechuan

dinated to other considerations. The French have secured what they have been long seeking, the right to build a line through Yunnan to Szechuan with Chinese money and not their own—as was employed on the Tonkin-Yunnanfu railway—and it is inconceivable that they will lightly give their long-cherished ideas up, or even modify them, without a desperate struggle. It is the obvious task of the Hukuang Group, of course, to minimise competition with their costly line, and it will be interesting to see whether any steps will be taken with this end in view.*

From the Yangtsze to the South-west of Kweichow Province

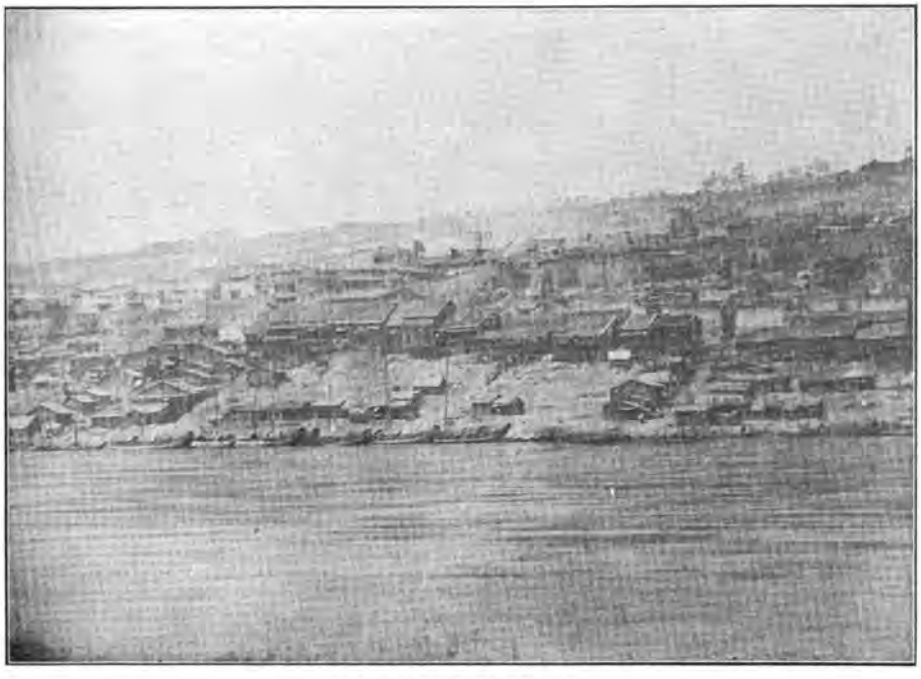
While the problem of opening railway communication with Szechuan and Yunnan provinces has been on all men's minds—that is all men interested in the west of China—for many years, little has been said of the desirability of specially considering the claims of Kweichow province. That, of course, is understandable. The Yangtsze gave access to Szechuan and to Yunnan, while Kweichow has been hidden away behind its mountains practically unknown, having no rivers to command attention, and most difficult highways to dampen the ardor of the mere seeker after commercial possibilities. It came somewhat as a surprise, then, when it was announced that an agreement had been signed with the British firm of Pauling and Company for the construction of a railway from a point on the Yangtsze, opposite Shasi, to Shingyi, a name on the map in the south-west of Kweichow, but unknown in the geography of the general student of China. Yet this line is one of exceeding importance, both to Kweichow and Yunnan, as well as to the Central Government.

After travelling through Kweichow with the Blackburn Chamber of Commerce Mission Mr. F. S. A. Bourne set it down in the report of the Mission that "in no part of China would railways be of more advantage to the country than in this province, where there is no water traffic at all except on the eastern side, and there very difficult." The best road to follow would be through Hunan to the Yangtsze, near Hankow, a line which, Mr. Bourne hazarded, would pay at once.

The railway which the Chinese Government propose shall be built will follow the trade route from Hunan, and a point opposite Shasi, on the Yangtsze, some miles west of Hankow, was selected as the starting off point owing to the impossibility of building a railway across the low-lying, semi-flooded country to the south and south-west of Hankow. As direct rail connection with Wuchang, opposite Hankow will be impossible, either a branch line will be run from the Hankow-Szechuan line to Shasi, which could be reached by a ferry across the river, or water connection with Hankow will be availed of. Shasi is growing important enough to merit the connection with the

The City of Kweichow, situated on the Yangtsze River, Szechuan

* Since this was written it has been reported that it is probable the Hukuang Group will protest to the Chinese Government against the right given to France to build the Yunnanfu-Chungking line.

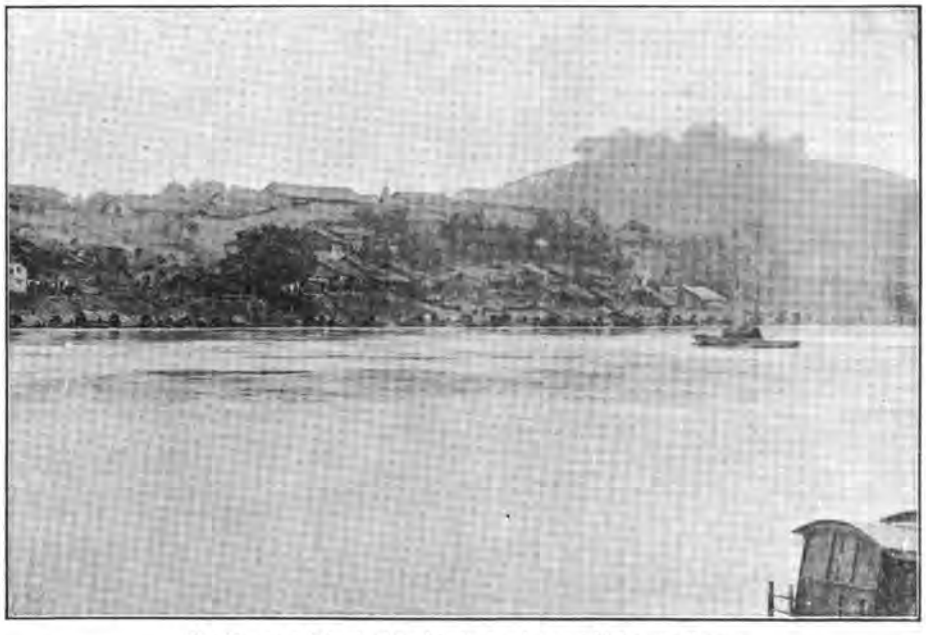


A part of Chungking, Szechuan

trunk-line-to-be, and the desire of the Government to have lines of communication with distant parts radiating from Hankow will no doubt dictate as rapid connection as possible being effected with the line into Kweichow province.

Of Hupeh cities Shasi (with a population of 96,000) ranks second in importance to Hankow, and its geographical situation in the centre of a vast system of canals and waterways connecting it with populous and fertile portions of West Hupeh and Hunan must secure it still a more important position in the future. That is the opinion of the Commissioner of Customs there. He reports that a careful computation of the trade of the port which does not pass through the Customs offices, exclusive of salt and opium, gives a healthy total of Taels 8,000,000. Its prospects of developing into a promising milling town are also exceedingly good since it is already noted as the headquarters of a considerable cotton trade, and has been long famous for its nankeens, in the production of which every hamlet and village in the district finds employment. The Commissioner declares that capital is to be found in the district, as well as the desire to invest it in anything spelling profit and progress, and he urges firms who propose to open on the Upper Yangtsze to study well the potentialities of Shasi before going farther afield. It may seem paradoxical, he adds, but were Shasi the terminus of large steamer traffic instead of Ichang, thus giving local exporters an equal chance of securing freight, it is conceded that the Customs revenue here would be twice, or treble, that now returned from the two ports. Shasi has, however, robbed the adjacent city of Kinchowfu of its one time importance. It was once the capital of a large province, and, under the late dynasty, the seat of a considerable Tartar garrison, but by the end of 1912 over 12,000 Manchu and an equal number of Chinese left the city, many going to Shasi and other less settled districts in the region. Though Kinchowfu will no doubt continue as a centre of an increasing nankeen, weaving, and silk trade, it is unlikely ever to attain its former prosperity. In 1912 the net value of foreign imports at Shasi was Taels 3,868,831, cotton yarn, cotton piece goods, sugar, indigo, dyes, and kerosene oil being the chief items. The Customs report for 1912 states that cotton piece goods increased heavily and must increase, while the demand for cotton yarns and indigo to supply the huge weaving industry carried on in the surrounding districts will also increase. Among exports raw cotton, raw silk, an enormous quantity of nankeen, vegetable tallow, beans, cereals, seed and seed cake, medicines, hides and fungus, figure chiefly. Bean and seed-cake mills are increasing in the interior, and paper of fair quality is exported by junk in increasing quantity. A flour mill with British engines and Japanese plant has been erected in the vicinity, and a large weaving factory with modern machinery is in course of completion.

The statement is made that Shasi nankeens are to be found in every village of Szechuan and Yunnan province, a trade which will surely develop immediately railway communication



The Northern Suburb of Luchowfu, Szechuan, at high water Season

Map of Yunnanfu, Capital of Yunnan Province

is opened to Kweichow province. It costs under present conditions at least seventy-five cents (or 1s. 6d.) to carry a 12lb. piece of grey shirting from Hankow to Kweichow, and Taels 18 to transport a bale of yarn, in each case 20% ad valorem. At present the trade flowing direct from Shasi into the southern hinterland is carried by junks across the Yangtsze and down the canal systems which dissect the country to Changsha. The main road, along which the proposed railway will no doubt run, if it is built,—for everything depends upon the survey now being carried out—goes south by west over low plains for twenty-five miles to Kungnan, when higher ground can be taken advantage of to Lichow, on the Ling river, a feeder of the Tung-ting Lake, thirty or forty miles to the east. At Changteh, on the Yuankiang, the road branches to Changsha, the capital of the province, the main route keeping south-westward along the Yuan river into Kweichow province. Changteh, by virtue of its position on the Yuan river and the highway to Kweichow and Yunnan is an important distributing centre, where a busy trade is carried on. Here all the junks start on their arduous journey up the rapids of the Yuan-kiang, and likewise the trade that is brought down is handled and sent off to Changsha or Hankow. The region thus far passed through and on to Changsha depends solely upon coolie transport. Wheeled vehicles are taboo—and the pack-horse is not tolerated. Man and merchandise are conveyed by coolies, the former in unwieldy chairs.

Changsha is about 110 miles from Yochow, on the Yangtsze, at the entrance to the Tunting Lake, and about 245 miles from Hankow by the river and lake. It enjoys the distinction of being one of the old famous cities of China, since the Taiping rebels were successfully resisted there. The population, estimated at 250,000, is decidedly conservative, but their city is regarded as one of the finest in China from the point of view of wealth of the people and size and character of the shops, the condition of the streets and public buildings. It is situated on the east of the Siang river, the perimeter of the walls—which are close to the river on the west side—being about five miles. The streets are stone-paved, clean, but narrow; the shops handsome and stocked with large assortments of goods. Gradually the people are losing the anti-foreign sentiments for which they were noted and the result is a steady advance in commerce.

The returns of the Customs Commissioners show a growth which is striking. The net value passing through the Customs in 1912 was Taels 22,038,368, an increase of Taels 4,348,000 over the figures for 1911, and more than double those of 1909. Yet the upward trend has only commenced. Imports absorbed Taels 3,301,000 of the increase, and export figures would have been some Taels 2,000,000 more had it not been for the restricted output of the Pingsiang Collieries owing to the temporary cessation of work at the Hanyang ironworks, near Hankow. The increase in foreign imports direct and coastwise, was contributed mainly by shirtings, jeans, cotton yarn, copper, (ingots and slabs,) bags of all kinds, arms and ammunition, indigo, kerosene oil, paper, machinery, refined sugar. Copper was imported for the mint, and the doubling of the value of dyes was due to the presence of foreign agents in the port. Chinese exports comprise two kinds (1) articles bought by foreign merchants for export abroad, such as ores, metals, beans, bristles, fresh eggs, feathers, hemp, hides, nutgalls, tea and wood oil, rape and sesamum seed, vegetable tallow and varnish; and (2) articles exported by Chinese firms for domestic consumption, as arsenic, bamboo shoots, black beans, coal and coke, preserved eggs, fire-crackers, grass cloth, lard (for use of Chinese in Straits Settlements), lotus-nuts, medicines, nankeens, 2nd quality paper, steel bars, tobacco, paper umbrellas; and articles bought by Chinese firms for sale to foreign merchants in other markets such as fire-crackers, human hair, hemp, black tea, and tea stalk. The

Salt Carriers in Kweichow Province

The River at Panghai—Kweichow

most notable increases shown in this trade in 1912 were by broad beans and wood oil, the former being shipped to England, Germany and Italy, where they are used for horse fodder. A considerable quantity of the crackers are said to find their way to America. Antimony is also exported largely though more regulus is being shipped than crude, the smelting fees thus being retained in the province. Hitherto the Huachang Smelting Company has had a monopoly of the manufacture of regulus, reports the Commissioner of Customs, and it has increased its capacity to about ten tons a day, and a further enlargement of the plant is contemplated. The establishment of two new smelting works in different parts of the province is contemplated, and is justified by the large deposits of ore. These deposits, probably larger than any other area of similar size in the world, when worked and refined, cannot have but a serious effect upon the antimony market. At the Shui Kou-shan mines zinc and lead ores are being produced to fill foreign orders, the mines, being the richest in the province. They were opened sixteen years ago and are solely under Chinese management, work being carried on under both western and Chinese methods. The mines are fully equipped with machinery and are connected with the river by about three miles of light railway. The ores are dressed at the mines, the zinc being mostly sold to the mint for about Taels 200 per ton. Lead is not produced, the smelting works which were established in the city being closed after a few months. The output for three months of 1912 is stated to be valued at Taels 5,000,000. With the exception of these mines there are probably no others working in the province according to modern methods, the main hindrance being want of capital. A great future is prophesied for tin, the metal exported being of excellent quality. The mines, however, are worked only by Chinese methods, and the pewter-ware for which the city is famous is made mostly from the product.

These few facts of the mineral possibilities under existing difficulties of communications indicate clearly enough what the future of the province would be if opened up by railways. Changsha is now dependent upon the waterways, which, however, give a service of immense value in developing the trade. During 1912 a total of 1,166 steam vessels, and 1,272 sailing vessels entered or cleared under "general regulations," while 6,040 entered and cleared under "inland steam navigation rules." The city is, however, destined to increase in importance by virtue of railway connections, for in addition to the line which will pass through it from Peking to Canton, and the one likely to be built from Shasi and Changteh, there is also one projected from Nanking, through Nanchang, the capital of Kiangsi, to Pingsiang, the line from which place already exists and brings coal from the mines that are working there.

From Changteh the road to Kweichow follows the Yuan River valley, climbing past gorges of utmost picturesqueness, and traversing undulations which give marvellous views of rugged scenery, temples perched on craggy points, and the wild river roaring over rapids beneath—rapids which, however, deter not the toiling junkmen who pull their boats upstream, twenty to thirty men to a junk, in defiance of all natural obstacles. And so to Shenchowfu (455 feet above the sea) and to Yuanchow, —the point of junction of the roads from Canton, from the south-east of the province, and from the north-west—and on to Chenyuan, the head of navigation. Just before reaching this city a bridge of five or six arches spans the stream, and, combined with the rocky heights which surround the town, lends to the scene a distinct air of grandeur. The gorge passed through before Chenyuan opens to view is one of the most picturesque, as well as most difficult, on the river. To Shihping the road is ill-paved, marked by steep inclines and precipituous paths, though beyond Hsinchow it follows a high level, the valleys below being cultivated by rice farmers. Coal is frequently outcropping, and evidences of iron abound. The depopulated nature of the province is responsible for fertile and beautiful valleys through which the road passes being practically deserted, though, as the capital is approached, the cities grow in size and the country is more cultivated. From Kweiting onwards the road traverses narrow ravines, with trees such as willows, oak, horse chestnut, ashes, and sycamores covering the lower slopes of the hills. Wild flowers grow in abundance and what the late Mr. Margary describes as "a paradise of ferns" is passed through. The last pass before Kweiyang is reached permits of a magnificent view and the city as it rests 3,527 feet above the sea on the uneven plain below. It is surrounded by high hills, many of which attain remarkable shapes and stand solitary in the plain. Viewed from the distance, with a wealth of green trees, suggestive of coolness and shade, the city looks inviting, but the traveller upon entrance finds it much as other cities in China—crumbling in the hands of time. Memorial arches of all shapes and sizes wrought out of white marble crowd the road to the city, and give eternal renown to pious maidens or stedfast widows.

The city is comparatively large and busy, the main thoroughfare running from the north to the south gate, and containing commodious and lofty shops offering a large variety of goods for sale. In the piece goods shops are to be found a large assortment of foreign and native cotton piece goods and plain and brocaded

French Catholic Church at Kweiyang

Winter scene at Kweiyangfu, Kweichow

silks. The Blackburn Mission reported that "trade generally was in a prosperous condition and the people prosperous, though enterprise was restricted owing to lack of capital."

Coal is the fuel burned in the city the main supply coming from mines ten miles away to the west. Immediately outside of the city the road continues through cultivated tracts and through large areas of arable land unoccupied, but which, in former times, was intensely cultivated. The road ultimately winds among low hills of strange formation, passing a remarkable avenue of hills extending in a straight line north and paved for several miles with a perfectly flat and narrow strip of land between. There is, says Mr. Margary, a regular conclave of huge tumuli, which do not exceed 300 feet in height, in this region, the road threading its way between them to fine valleys which throw out long arms like estuaries. Grass covered plains are the feeding grounds for herds of tame buffaloes owned by the Maiotze tribes people, who live in the villages or on the hills.

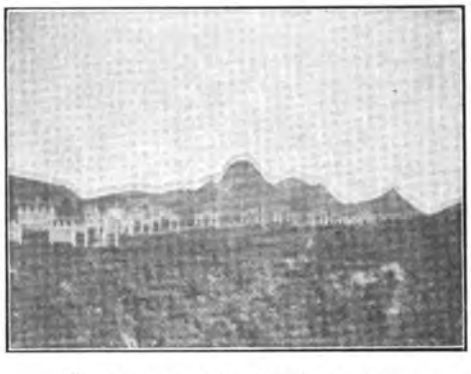
Sixty-five miles from Kweiyangfu stands the walled city of Ashunfu, which is approached over undulating downy ground, and through a graveyard extending over two or three thousand acres on the east side of the city walls. Though small in size and population it is the centre of a prosperous trade, and is the second most important city in the province. The main street is well paved, and ornamented with memorial arches. Large shops contain ample and varied stocks of goods and merchandise, and there is an enormous and ever increasing demand for foreign yarn, the value annually imported greatly exceeding that of all other imports taken together. The weaving industry is a large and profitable one. The city is also the province's centre for the white wax insect, bags and baskets containing the pupæ of the insect being offered for sale.

The road goes westward through increasing cultivation, the valleys being broad and of rich soil. Mr. Margary writes at this stage, "one thinks Kweichow an impenetrable mass of mountains, but it was most remarkable to find it possessed of many fine plains lying in the right direction." Five miles from Chenning the broad valley ends and a smaller one is entered over an easy pass, and extends for about three miles when the road again runs sinuously between grass covered hills, soon to meet with a rocky mountain barrier. Near Hwangkwe, the river leaps over a precipice 140 feet high, and beyond the road ascends and descends, "but even in the midst of this mountain mass, where the rocky cones were tossed and tumbled like a stormy sea, there was a succession of quiet valleys down below lying flat at the bases of these abrupt boundaries." Near here the road to Shingyi leaves the main route to Yunnan and enters difficult country. A deep cleft is crossed, with more ascents, and the road descends into a canyon of desperate appearance by a precipitous path. The turbulent river rushes between high vertical precipices which almost shut out the light till it disappears into what looks like "the dark entrance to the nether world," as the report of the Blackburn Mission puts it. A stiff climb of 2,400 feet then takes place, and within a few miles a similar descent is made with a gradual rise to Taipingkai. From here on to Shingyi (or Wang-tsca-pa as it used to be called) the country is more conducive to ease and comfort, the route

Outside the West Gate of Kweiyangfu, Kweichow. The Shanyuan Temple, and road towards Anshunfu

Transport in Kweichow Province: on the Kweiyang Road

Miao Women Porters, Kweichow



The Approach to Kweiyangfu, Kweichow

A Salt Market in a Kweichow Town

traversing narrow valleys amongst limestone hills, profusely covered with flowers, shrubs, and particularly radiant roses. This is on what the natives call the yellow grass plateau, of which Shingyi is the market town. The valley in which Shingyi is situated is well irrigated and boasts of an enterprising population, who devote untiring energy to cultivation and irrigation.

Shingyi is remarkable for the large quantity of Indian yarn that is imported annually, and the quantity of cloth which is produced in the town and neighborhood from the yarn. It is estimated that from 1,000 bales of 400 lbs. are sold every year and that from 2,000 to 3,000 looms are engaged in weaving various grades of narrow cloths from this yarn and native cotton. The greater part of the yarn is bought in Hongkong and shipped by way of the West River through Poseh, from which place it is carried on pack animals, taking twelve stages of an average of 30 miles a stage, to accomplish the journey. Shingyi is the objective of the railway from the Yangtsze, and at this point it is expected that the line which has been allotted to the Banque Industrielle de Chine to build from Yamchow, on the coast, to Yunnanfu and beyond, will pass, and so permit of a junction which will give access to Yunnanfu to passengers and freight travelling from the Yangtsze regions or from Kweichow province.

Mr. F. S. A. Bourne, in his report of the Blackburn Mission, says of Kweichow that it is "richer in agriculture, and I believe in minerals also, than eastern Yunnan. The bedrock is almost everywhere limestone, making beautiful scenery and a healthy climate; there is little or no malaria. The altitude gradually sinks from 5,000 feet in the west to 1,500 feet on the eastern side of the province—the Hunan border. It is not as badly cut up by water as Yunnan, where every stream has made itself a deep canyon, but consists for the greater part of narrow valleys between limestone hills, a stream running down the bottom, perhaps a little terrace cultivation near the stream, but the hillsides given up to ferns and flowering shrubs, which grow in the greatest luxuriance, or, if the valley is some way from a town, covered with trees, not heavy timber, but fire, bamboos and fruit trees; pheasants are calling and water splashing—an earthly paradise. To this natural beauty the works of man present a melancholy contrast."

KWEIYANG, CAPITAL OF KWEICHOW.

[**Note.**—The latest information suggests that the American section of the Hukuang Lines beyond Ichang will be extremely difficult and costly and will take many years to build. Until the American section is built the line from the Peking-Hankow Railway to Ichang would be of no service in tapping the trade of Szechuan, the main justification for its construction. In any case the branch line to Siangyang would be built and, as stated elsewhere, Herr Linow, the Engineer-in-chief of the German section has recommended that it should be undertaken first. Some doubt has been expressed as to whether the American section will ever be built, as the French line from Chungking to the Gulf of Tonkin, if built, would attract the trade. It is calculated that the British and American sections of the Hukuang lines will cost about £8,000,000 each, while full amount of the Hukuang Loan is only £10,000,000.]

ARCHITECTURE IN THE CHINESE CAPITAL

THE SUPREME COURT OF JUSTICE

The Taliyuan, or Supreme Court of Justice, which was recently opened for public business forms another important addition to the few existing government buildings in Peking designed in foreign style. Situated in the Hsin Pu Chi Street in the Western Quarter of the Tartar City, the building is of some considerable extent, having a frontage to Hsin Pu Chi Street of 450 feet, and a depth of approximately 150 feet. Being four storeys in height, it stands out prominently from the immediate surroundings.

The building is designed in a free treatment of the English Renaissance style of architecture, and being set back close on 150 feet from the roadway, it has a decidedly handsome and attractive appearance.

The façade to the street has a rusticated ground floor storey, and two floors above marked by an Ionic colonnade, the whole being crowned by a balustraded parapet. The central feature of the façade is the clock tower, which rises to a height of 110 feet, while at either end of the front there are smaller towers rising to a height of 90 feet. Each of these towers has a dome top, which is covered with copper. The building throughout is built of local made brick, the whole frontage, and the return faces of the corner towers being finished off in cement plaster, while the remainder of the elevations is faced with blue bricks having bands of red brickwork at the sill and lintel courses as well as in the pilasters. The roofs are covered with red tiles also of local make. In the centre of the building are two large courtyards, each measuring 155 feet by 55 feet, thus ensuring plenty of light and ventilation throughout all the rooms in the building.

Access will be obtained from the roadway through two handsome wrought iron gateways, set back some distance from the front boundary, and on either side of the forecourts to same, there will be erected two small gate lodges.

The principal entrance to the building is in the centre of the façade under the clock tower, while there are also other entrances in the front

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RAILWAY DEVELOPMENT OF WESTERN CHINA

BY ARTHUR J. MOORE-BENNETT.

Whilst in the balance of China, the railways so far projected, are for the most part designed to help China open up her vast mineral and other resources, here in the West, the roads under discussion seem to leave out all considerations of trade, and economic factors generally, and to consider railways only from their political, and military value. Whilst this policy may be a progressive one on the part of Great Britain, the writer fails to see why China should be called upon to foot the bill for roads that cannot advance her commercial interests and would appeal to all friends of China, to get the best possible lines to develop trade—and not militarism.

All roads, whether projected or existing, may be divided into two classes, the first to include all roads that cannot by reason of the sea board connections and geographical positions, assigned to them, be other than political or military roads, the second to include all roads that by reason of their route, may be looked to develop the three Western provinces of China.

In the first class must be put the Tonkin railway, the proposed Bhamo, Tengyueh, Tali, Yunnanfu railway, the Suifu railway, the Lashio, Kunlong, Nam Ting, Yunchou, Talifu railway.

In the second class the Poseh, Yunnanfu railway, the Singyifu and Nanningfu railway, and the Bhamo, Tengyueh railway.

The Tonkin railway is included in the first category inasmuch as, whilst its position geographically should make it the most favourably situated to serve the central part of Western China, the policy of the French government in putting prohibitive transits on merchandise, en route for and from China, prevents the road developing Yunnan or Kweichow, as it otherwise would, and until these rates are removed, the Tonkin road must be looked upon as more of a military line than anything else.

In regard to the Bhamo, Tengyueh, Tali, Yunnanfu line, whilst Bhamo is not on a railway, yet it is the head of navigation on the Irrawaddy, and has a fine service both freight and mail, all the year round, and a line from Bhamo to Tengyueh, up the Taiping River,—a distance of 123 miles in an easy country to within 15 miles of Tengyueh, where hills are encountered,—would undoubtedly pay, not only for the through traffic, but for the local traffic, especially in rice and foodstuffs, but if the line is carried through past Tengyueh East towards Talifu, the writer cannot believe that such a line can pay.

Bhamo is at an altitude of about 354 feet above sea level. Tengyueh, 123 miles N. N. E. is at an altitude of about 5,350 feet; continuing eastwards, the lay of the land, is mountain ranges running north and south, dividing first after Tengyueh, the Shweli watershed, from the Salween, then the Red River from the Mekong, and taking any route from Tengyueh, it is necessary to climb and fall an aggregate of over 12,900 feet, not counting rises of under 100 feet, in a distance of 115 miles tangentially, or about 188 on any line that can possibly be taken. Whilst in engineering, nothing is impossible, yet economically as the line will run through a most sparsely inhabited country, it cannot be seen that a line that will in the first place not admit of merchandise being sent into China without transhipment at Bhamo, and will then have a haul of over 312 miles to Tali, another haul of 228 miles to Yunnanfu, or including the distance from Bhamo to the sea by boat, a total haul from sea board to railhead at Yunnanfu of 1,380 miles, can possibly be considered in the light of an economic factor built for the well-being of commerce.

Again, the cost of the first section, Bhamo to Tengyueh, will be light, not exceeding £8,500 for a meter gauge line, but this will be offset by the cost of the second section that will cost at least £20,000 per mile, and it is on this section, that the least local traffic may be expected, whilst the third section will average about £10,500 per mile so that at the best—using Indian methods of construction—the whole line cannot be built for less than £8,000,000 including rolling stock, which sum might be spent in many ways, far more calculated to help China develop.

The Lashio, Kunlong, Nam Ting, Yunchou, Yunnanfu line, whilst avoiding the heavy grade crossings of the more northern line, is open to the objection of length, as Lashio is 570 miles from Rangoon, and the line between Mandalay and Mamyo ascends a face of the hills forming the Eastern wall of the Irrawaddy, by means of a switchback—and the whole road at this section which rises 3,600 feet in less than 30 miles at 4 per cent. grades, is not now, and is never likely to be capable of handling heavy freight; moreover, as no line in Burma connects with the Indian systems, and as the Burma railways are meter gauge, as against the standard and broad gauge of the main Indian systems, it is difficult to understand how such a line could be made to connect unless the gauge was changed throughout.

As projected, the length of the line from Rangoon to Siakwan or Tali, via Yunchou, is 989 miles, and from here to Yunnanfu, about 225 miles—hence the haul from the sea board, in this case, can be reckoned at 1,220 miles.

As regards the cost of this line for meter gauge, the writer—who has been over the whole route—cannot believe that it will average less than £17,000 per mile for the 212 miles between Kunlong and Yunchou, and from £10,500 to £15,000 per mile for the remaining sections.

Both these routes lie open to the objection, that the terminii on the sea board are in foreign territory, in both cases, and merchandize would always be subjected to outside interference, in time of war, whilst in times of peace, taxes to any amount can be levied on goods in transit.

*The Suifu-Yunnanfu line cannot be said to be a commercial line, as the terminus on the Yangtsze is not the head of navigation, and goods cannot be brought up to Suifu without very considerable cost and risk. In length, as projected, this line is 412 miles; the first section following down the Nui Lan river from its source near Yunnanfu to a point about 22 miles south of Chaotungfu, is easy country, but very difficult work exists between this point and Chaotungfu, and again from Chaotungfu to Takwan Lo with heavy grades, long tunnels and side hill cuts whilst just west of Takwan the line descends by means of a switchback to the Heng Chiang, which at this point falls 3,000 feet in less than 20 miles. The total cost of this line has been estimated at £7,000,000 for American practice line, but if a Continental or British Syndicate was building, the cost would probably be nearer ten million sterling. It is stated locally that this line is desired to develop local trade between Yunnan and Szechuan, but unless Yunnan can be coupled up to a sea board line to the south or south-east, it is hard for anyone living in the country to understand how such a line can be of use in any direction, as Szechuan certainly could not afford to either receive or send merchandise via Yunnanfu to Haiphong, when she can ship it on Yangtsze ports.

This, then, disposes of the first class of the proposed railways. The writer has the whole of the technical details relating to every survey made in the West but as these are not of general interest, he proposes only to touch on the economic side in this article, leaving the technics to a future paper.

To the East and South-east of Yunnan, there rises the West River. The height of navigation on this river lies as a point Poseh 284 miles from Yunnanfu as the crow flies,—or if river conservation works were carried out,—at Pai-Ai, 249 miles tangentially.

This point then, is the economic point of Yunnan, from a development standpoint, and to this point three surveys have been made. The first was made by Mr. K. S. Low, in 1910 from a point below Poseh to the town of Lopingchou, which lies 99½ miles from Yunnanfu. Mr. Low for reasons† carried his line from the West River up a tributary—the Lorli river—to the north-west, from these ascended a range and dropped into the main stream of the Hung Shui Chiang, which he ascended to a point south and East of Lopingchou, where the steepness of the cliffs drove him up a tributary from the north, which he ascended, then descended, another small creek into the main river again at a point nearly due east of Lopingchou, when he left the main stream and turned west up the Twang Chang Ho, a river running past Loping 3 miles to the north of the town. Mr. Loh proceeded up this stream to a point east of the town of Yuehchow, and there the survey stopped.

According to Mr. Low's figures, which were given the Central Government, this line was 396 miles long, from Yunnanfu to Yuehchow (estimated) to Loping, and Poseh, and the cost—which the writer considers excessive—was placed at Tls. 51,000,000 for standard track, 80 lb. rails 2½% ruling grades, 12 degree curves, line and rolling stock complete.

The second survey, made by Mr. W. S. Dawley and the writer, was one run during 1912 and 1913. The route was Yunnanfu, Yanglin, Chuchingfu, Yuehchow, then down the Twang Chang Ho to Lopingchow, from thence due south to the crossing of the Pa-Da-Ho, then up a tributary—the Ching Shui Chiang—and across a ridge, a direction nearly on a "B" line with Poseh, to the head waters of the West River, from thence across the right wall of the main West River into the Hsi Yang Ho, joining the West River, ten miles above Pai-Ai, and continuing down the right bank to Poseh.

This line is 406 miles long, penetrates a richly settled country, passes en route, coal, copper, and spelter fields of known richness, and for a standard gauge track, 75 lb. steel, 12 degree curves, 2½% grades, can be built for £6,150,000, including river conservation works on the West River to give 24" water at all seasons.

The third survey of this line was made last year, and the route chosen was the most direct possible, viz., Yunnanfu, I-Yeang Hsein, Da Shao, Dia Dee, Shih Tung Hsein, proceeding to the Pa-Da-Ho south of Loping direct, shortening the second survey by 36 miles, and bringing the total estimated cost down to £5,640,000.

During the whole length of both surveys as above (2 and 3) the projected lines run through the richest and most thickly populated portions of Yunnan and Kwangsi, in easy country, presenting no engineering difficulties of any kind, and either route, would bring Yunnan in direct communication with Canton and the Southern sea board.

In regard to the Shingyifu, Nanningfu line, this, so far as the writer is aware, has never been surveyed, but the country from Shingyi, directly south-east, is easy, being for the most part rolling hills, of under 5,000 feet altitude, whilst the bulk of the country lies at 3,000 feet and under. (It should be noted, that even the best maps put the positions of Poseh, Shingyifu the Hung Shui, and all this section, incorrectly, as Shingyi lies further south, and Poseh further east than is shown.)

If railways are to be built in the West, to develop China, then the soundest lines are certainly those which will terminate at Canton. Ocean freights from Europe and America are better to Hongkong, than to Hankow as a rule, and until the Yangtsze becomes navigable up to Suifu, for cargo craft, and until the dangers to navigation can be removed in the river, below this point no line that will not give Yunnan, at least as good a service as the Poseh one should be discussed. Connection could be made with the Yangtsze valley line by a branch from Lopingchow to Shingyifu, a distance on a line of 103 miles, so that for 550 miles of railway would, with the connecting lines, join up Yunnan to Hankow, and to the West River navigation ports, or if the Poseh line be continued to Nanningfu, a total length of under 1,000 miles of line, would put Yunnan, Kweichow and Kwangsi within three days of Hongkong and also in touch with the Yangtsze.

To build lines to a sea board on the Bay of Bengal—600 miles as the crow flies, or to Bhamo, 360 miles in a line, through the worst country in Western China, may be good for foreign countries; it is certainly not developing a poor country to the best advantage, although it is admitted that the Bhamo, Tengyueh line, would be good, if it stopped at Tengyueh, as up to this

* When Mr. Moore-Bennett wrote this article the Banque Industrielle Agreement for a line connecting Yunnanfu with Chungking had not be enmade.—Ed.

† Mr. K. S. Low states that his route was selected after instrumental survey, and follows almost direct valleys; that he desired to escape taking a route which would compel a junction with the French railway south of Yunnanfu, that the lay of the mountains were such that it was more advisable to keep well to the east of Yunnanfu; that rich valleys are tapped by his route. *Ed.*

point no engineering difficulties are encountered, whilst it would serve the whole of the west of Yunnan and, unless the Tonkin railway removed its rates, a considerable portion of Central Yunnan, but in no sense can any line coming from the west develop, Kweichow, Kwangsi, or Szechuan, to the best advantage.

The Suifu line, might justify its expense by reason of its opening up of the Tung Chuan Copper, spelter and coal fields, and by reason of it allowing China to concentrate troops at any point along her Western frontier, but it will be to the West River lines, that the West must look for the salvation that cheap transport to the sea gives to countries in a backward state of development.

A close study of the situation, and of any ordinary map of Yunnan will, the writer feels, surely convince any fair minded person that if China is to be saddled with a debt of seven to ten million pounds for railway construction, then the railway to be built should be one that will open up the most country at the least expense—it being borne in mind always, that, first, any line that is not entirely in Chinese jurisdiction, from railhead to sea board cannot be considered satisfactory, and, second, that ocean freights anywhere are cheaper than rail freights ever can be.

The writer has travelled, continuously in Yunnan for six years, and knowing the West, he cannot conceive a more unfair road, than the suggested Tengyueh, Tali and Yunnan line in view of the known easy route to the West River watershed.

The road can never compete with the Tonkin line, if the latter removes its prohibitive dues, which it is likely to do the minute competition takes place, and as a consequence, China will be saddled with 350 miles of expensive track—built at enormous cost, of a different gauge to her main trunk lines—a white elephant of no value to any save British Commanders-in-Chief in India.

In conclusion, any technical details of the lines under review will be gladly furnished to interested parties—on application to the Editor of the FAR EASTERN REVIEW.

INTERNATIONAL INTRIGUES IN CHINESE RAILWAYS

In view of the disclosures made in the article in the January issue of the FAR EASTERN REVIEW in regard to international intrigues in connection with the railways of China, it is significant that the Belgian Legation at Peking has been constrained to notify the Chinese Government that the Lung-Tsing-U-Hai Railway Loan is Franco-Belgian, not purely Belgian as the Chinese were originally given to understand. This notification was also prompted by the fact that the French capitalists refused to recognise the appointment of any but a French chief engineer, which the Belgians were willing to accede to, but which the Chinese opposed on the grounds that the French had no say in the line since the line was purely Belgian. An allusion to this difficulty was made in the article in the January issue of the FAR EASTERN REVIEW.

It is also interesting to note that the British have protested against the Lung-Tsing-U-Hai line terminating at a port on the Yangtsze instead of at Haichow as originally proposed. It is reported that the Chinese have notified the Belgians that the terminus of the line must be elsewhere.

PROPOSED NEW RAILWAYS IN CHINA

Active negotiations have been proceeding of late between the British and Chinese Corporation, Limited, and the Ministry of Communications, for the construction of a line from Nanking to Nanchang, the capital of Kiangsi province, and to Changsha, the capital of Hunan province, where a junction will be made with the Canton-Hankow railway. The line will, of course, be an extension of the Shanghai-Nanking railway, and will put the capitals of three provinces in touch. As a matter of fact if the Pauling railway is built to Kweichow and connection is made with Yunnanfu, there will be railway connection south of the Yangtsze direct from Shanghai to the capitals of Kiangsu, Hunan, Kweichow, and Yunnan provinces, with possibly a branch line to the Yangtsze opposite the capital of Anhui province. The British and Chinese Corporation are also negotiating for railways north of the Great Wall, from Hulutao, on the Peking-Mukden line, to Chaoyangfu (a map of which appeared in a recent number of the FAR EASTERN REVIEW) on to Chihfeng, to Changtehfu (Jehol) and to Tungchow, near Peking, with possibly an extension to Dolonor. The Chinese are anxious to have these lines built, but the arrangement between Britain and Russia under the Scott-Muravieff agreement will probably prevent British capital operating, and the Chinese may possibly have to build this system with their own money.

In Fukien province, which the Japanese have endeavored to ear mark as their "sphere" in southern China, an effort is now being made by Japanese capital to secure a long-cherished railway from the port of Foochow north-westwards to Nanchang the capital of Kiangsi province. This line would connect with the Japanese line which is now in course of construction from Kiukiang on the Yangtsze River, to Nanchang, thus giving through connection between the Yangtsze and Foochow on the coast. The railway is an important one for Fukien province and must be built some day or other, even if the Chinese repulse the Japanese overtures now.

JAPAN AND THE HANYEHPING LOAN

A storm of protest has arisen in certain circles in China in connection with a loan transaction made by the Hanyehping Company—the organization which controls the Hanyang ironworks, the Tayeh iron mines and the Pingsiang collieries,—with the Yokohama Specie Bank, of Japan. The loan is $15.-000,000, of which $6,000,000 was to be devoted to paying off obligations of a current nature, and $9,000,000 to the improvement of the equipment of the Tayeh iron mines. The loan was to bear 6% interest, and the principal was to be repaid in the shape of iron ore to the quantity of 13,000 tons per annum, to be delivered at a price fixed for ore of varying grades. The agreement provides that a Japanese engineer and a Japanese accountant shall be engaged by the Company for the purpose of supervising the expenditure of the money.

When the fact became known to certain sections that a loan had been contracted by this Company with the Japanese an immediate outcry was made that the Company was "selling sovereign rights," and an attack was levelled at the Minister of Industry and Agriculture, Mr. Chang Chien, who was accused of consenting to the deal, if not of participating in the actual negotiations. Public meetings were held, the native newspapers opened a campaign, and telegrams and letters were sent to Peking demanding a cancellation of the agreement on the grounds that the Hanyang ironworks and the subsidiary industries at Tayeh and Pingsiang—constituting China's most vital existing industry —were being handed over lock, stock and barrel to Japanese control.

It is stated that the protests were supported both by President Yuan Shih kai and Vice-President Li Yuan-hung, The Minister for Industry declared that he was not involved in the transaction in any way, and in due course despatched a telegram to the head office of the Company instructing that the draft agreement for the loan must be submitted to the Ministry for approval before it is signed and describing it illegal if it has been signed without first being submitted. About the same time Mr. Sheng Hsuan-huai, representing the Committee of Directors, (and who as Minister of Communications in 1911 devised a scheme for nationalisation of railways which precipitated the revolution*), applied to the Ministry for approval of the loan on the grounds that the Company was a private one, recognised by the Manchu Government as such, and that therefore it was privileged to borrow money without reference to the Government. He added that in May, 1911, owing to shortage of funds, an arrangement was come to with the Japanese Iron Manufactory and the Yokohama Specie Bank for a loan of $12,000,000, of which

*See Revolutionary Number of the FAR EASTERN REVIEW April, 1912.

$3,000,000 was paid up, and the balance withheld owing to the revolution. The loan had since been resumed, and the $9,000,000 was to be paid in three years for the expansion of the Tayeh works and another amount of $6,000,000 was to be secured for the purpose of repaying all short term loans for which the Company had to pay heavy interest. The loan agreement was signed according to former procedure on December 12 last year, and in the annex to the agreement it was stipulated that the Company might repay the loan with Government funds so long as those funds were not borrowed from any other foreign concern. The Government may, therefore, if it considers the loan disadvantageous, give assistance to the Company to repay it, and the Company will be glad to negotiate with the Japanese Bank to repay the money.

The Minister of Industry replied in blunt terms to this document, pointing out that on June 6, 1912, the Government announced throughout the provinces that no loan would be valid if secured upon mining properties, without the sanction of the Government. As the agreement between the Hanyehping Company and the Japanese Bank contravened these orders the loan was invalid, and the Minister declared the agreement null and void, at the same time demanding that the Company should wait for instructions which would be given after the Ministry consulted with the Board of Finance.

It would seem that the Government has effectively answered the protests of the people, and now it will have not only to see to the saving of the Company from bankruptcy but might also be called to account by the Japanese. The contention of Japan is that its financiers have been involved in the Hanyehping concern for more than twelve years, having loaned up to $20,000,000, and that those interests have to be protected. Insofar as the operations of the Japanese might conflict with other nationals in the Yangtsze Valley the Japanese hold that as they have vesred interests in the region, and as the supply of iron ore and coke is essential to the sustenance of Japan as an industrial and naval nation, they must decline to be influenced by considerations which are solely political on the part of other nations. The Japanese have been buyers of big iron from Hanyang for many years, while at the same time they have been constant customers for iron ore from Tayeh and coke from Pingsiang. This trade is vital to them as a nation, and it is one which they will not permit to be disturbed without a struggle.

Mr. H. C. Carter, the Engineer-in-chief of the Shasi-Shingyi line recently allotted to Messrs. Pauling and Company to build by contract, has arrived with Messrs. C. F. Tristram, B. F. Nell, and E. A. Scott to make a reconnaissance of the route, and subsequent survey. The reconnaissance will take several months to complete.

COST OF RAILWAY BUILDING IN SOUTH CHINA

Under date of January 22, Mr. Frank Grove, M. Inst. C.E., and Engineer-in-chief of the Chinese Section of the Canton-Kowloon Railway, writes to us in connection with the costs of labor and construction work in the south of China. We are very pleased to publish Mr. Grove's letter, as a valuable contribution to the subject. He writes as follows:

To the Editor of the FAR EASTERN REVIEW.

Sir,—With reference to Mr. Bronson Rea's interesting article entitled "An Appreciation of China's Railway Engineers" in your November issue, allow me to point out that the rates quoted therein are in one particular misleading, though doubtless quite unintentionally so.

I refer to the paragraph as follows: "The average cost of earthwork on the Shanghai-Nanking Railway was 15 cents silver per cubic yard, on the Canton-Kowloon line 33 cents per yard, whereas the average cost per cubic yard on the Changshui extension has been about 6 cents per cubic yard."

I have stated in a paper on the construction of the Canton-Kowloon Railway, Chinese Section, that the average cost of finished earthwork of all classes (which, of course, included rock), also added contingencies, and protection works, did not exceed 32 cents per cubic yard; in fact the whole cost of earthwork, and rockwork, under its head of accounts, works supervision, explosives, stone pitching, retaining walls, tools (but not "plant" unless broken up and so "charged off" to earthwork) was divided by the total quantity, an average rate thus resulting.

The context of my paper showed that protection works were remarkably heavy, in one cutting alone $90,000 was spent on piling, retaining walls, &c., in order to deal effectively with a peat bottom and slipping sides, also 5 miles or so of high embankment were faced with stone, besides usual stone protection and turfing throughout. The percentage of rock, while, but a small portion of the whole, was by no means inconsiderable—actually about an eighth, a usual proportion in such country.

The rate was given, therefore, to engineers for estimating purposes where conditions are similar to those holding here which were fully described, namely, very high banks in flooded country, deep cuttings with treacherous slopes, &c.

It has not come to my knowledge that local Chinese engineers are able to obtain lower rates than foreign engineers. The old story of interpreters, employed by the latter, making huge "squeezes," has no bearing in recent years whatever it had in the past.

Interpreters are not needed. Contractors mostly speak English; local rates are well established, especially near large centres. Public and sealed tenders are taken too, and in the case of this railway, out of 30 such, only one contractor quoted an initial rate for earthwork of 18 cents per 100 c.ft. or, say, 12 cents per cubic yard, which rate has never been reduced. There is evidence to show, too, that contractors made little money—no suicides were reported as seems to have been the case in the North, but many tears were shed and the foreign engineers also proved themselves hard hearted! Professional earthwork labour is very poor near Canton, and Kowloon, owing to every one being very well off, and probably labour rates generally are higher than anywhere else in China. Importation of coolie labour is not permitted.

An interesting case occurred in 1909. Some 1,000 coolies brought from Hunan by an enterprising contractor were stated to have been branded and led away in chains, a most unlikely proceeding having regard to the bellicose character of the Hunanese. Repatriation promptly followed by order of the Viceroy, and, to add insult to injury, a claim was raised for costs! I merely mention this to show the difficulties of introducing new factors in competition such as would lead to a reduction of rates and a consequent economy.

I am at one with Mr. Bronson Rea in his appreciation of work done by Chinese engineers and in his well wishing towards the individuals—among all engineers there should be, and generally is, comradeship, mutual trust and appreciation, though unfortunately this may not be so evident in China as elsewhere. And for myself I cannot help feeling that such mutual understanding can only be obtained or improved by a just and frank recognition of the fact that all experienced engineers, of whatever nationality, who are *fit to be trusted* in charge of important works, are one and all equally able in carrying out the obligation of their duties.

To turn again to the matter of comparisons, it is somewhat strange that rates paid on a railway built in the extreme north of China, where labour is proverbially cheap, should be set against rates paid in the extreme south where conditions are so entirely different.

The statement made that "labour costs are generally about 25 per cent. higher in the South than in the North," is my own. This I must qualify in the case of *earthwork* and *unskilled* labour. It can be confirmed by anyone who cares to enquire that it is much nearer 100 per cent.—that is, the Northern labourer would be paid 25 cents against the Southerners 50 cents, though on piecework he would probably do more work and thus earn proportionately more. Thus the difference in initial rates can be amply accounted for.

Engineers who are able to carry out works with extreme economy owing to local conditions are, I grant, fortunate, for comparisons though sometimes "odious" cannot well be avoided. What I have written, however, will, I hope, enable a fairer conclusion and remove some misconceptions.—Yours, etc.

FRANK GROVE, M. INST. C. E.

PROSPECTS OF WEIHAIWEI

A correspondent writes from Waihaiwei:—The building boom continued right up to the middle of December, when heavy frosts stopped the work. The foundations of new buildings for Fock Tai & Co. have been laid, and the buildings will be erected as soon as possible in the coming spring. We shall shortly have business houses scattered all over the mat'on, extending from near the hospital on the east side right down to the city wall. Land for building purposes has gone up in some parts to four and five times its former value.

Industries of various kinds are being begun all over the Promontory. On the mainland, ladies' hair nets are being made and shipped to Germany, the hair being first of all sent from China to Germany to be prepared and re-shipped here to be made into nets. Women and girls learn the process of making these nets in a few hours, so it is giving employment to many all over Eastern Shantung. At Yungchenghsien a weaving factory has been started, employing about fifty hands, and is proving quite a success.

In Shihtao an enterprising Huanghsien merchant, who has a weaving factory and dabbles in photography, has started a factory for making a kind of isinglas or Iceland moss, from a sea grass called Lungtsuts'ai. It seems to have a big future before it.

PROGRESS OF THE SCHMIDT SUPERHEATER

The influence of the Schmidt superheater has been so far-reaching that it may be considered one of the most remarkable factor in modern locomotive development. Superheating was not in itself new when Dr. Schmidt commenced dealing therewith in the 'nineties, but whereas most earlier proposals—few of which attained practical trial—were of smokebox type and depended mainly upon waste heat, he insisted from the first that high degree superheat was necessary to realise results of real value. This meant that many practical problems were involved which had not applied to previous experiments, and with the original engines placed in service on the Prussian State Railway in 1898, much pioneer work had to be done, including the design of pistons, piston valves, stuffing boxes, and other parts to meet the conditions created by the high temperature of the steam.

Eventually the initial difficulties were overcome and the value of the appliance conclusively shown. Further engines were equipped in Prussia, and other experimental installations followed in Russia, Belgium, Canada, and the Cape Government railways. The apparatus then employed was of the smokebox type, with a large flue for conveying furnace gases directly to the smokebox. This design was not, however, used for many engines, and it was soon superseded by the original "firetube" apparatus, which was first adopted by Mr. J. B. Flamme in 1902 on the Belgian State Railway. This form included two elements in each large firetube and a two-fold steam path only; but it was applied to numerous engines in various countries and rendered conspicuous success.

But although in this form the apparatus realised a reasonable degree of acceptance and a considerable number of engines of all nationalities and types were equipped therewith, progress was still somewhat slow, except on the Prussian State lines. Then in due course the design was further modified to include the characteristic double-looped tubes, giving a four-fold steam path, and it is this form which has obtained acceptance all over the world. Repeat and additional orders followed, until in 1910 a total of 5,000 engines had been reached. Progress then became much faster, 10,000 being recorded in September, 1911, 15,000 in January, 1912 and 20,000 in January, 1913.

At the present time on the German railways 0,091 engines are provided with such superheaters; in France there are 1,773; and in the English Colonies 2,810. In Great Britain there are nearly 800 engines so fitted, and in Russia well over 900. Austria has nearly 800, Belgium nearly 700, Italy nearly 600, and the United States nearly 8,000. Other countries have less numbers, more or less, in proportion to their sizes. Altogether 435 railway administrations have Schmidt superheaters in use. This as we have already said, is a very remarkable result for ten years' work. It is only four years since the fitting of the 5,000th engine was celebrated in Cassel, and it is confidently expected that before another five years have passed the 100,000th engine will have been supplied with the Schmidt superheater! These figures relate to the Schmidt superheaters only.

Mr. G. J. Churchward, Great Western Railway, was the first to introduce it in the United Kingdom, though he has since used his own moderate-superheat design. Mr. Hughes (Lancashire and Yorkshire) followed, and the Great Northern and London Brighton and South Coast Railways were soon after concerned with trial equipments. On these three lines the Schmidt apparatus has been largely used ever since, and the list of railways now employing it includes virtually every important line, and several smaller ones in the kingdom, from the London and North-Western, where it is systematically employed by Mr. Bowen Cooke for almost all new engines, passenger and goods, to the County Donegal Joint Committee, where it is applied to narrow gauge tank engines.

It is incorporated, almost without variation, in the designs of hundreds of engineers; yet in not one single known instance has the Schmidt apparatus been removed from an engine on account of inefficiency, or because of dissatisfaction or difficulties.

The original British financial support was withdrawn partly in consequence of the liquidation of Messrs. Easton and Anderson, who at first held the patents and were to some extent responsible for development as far as British influence was concerned. Later, control was centralised in Cassel, under the supervision and technical direction of Dr. Schmidt, in the form of the Schmidt'sche Heissdampfgesellschaft G. m. b. H, but the British company has been an important factor in development all along. American interests are controlled by the Locomotive Superheater Company in New York. The present English company is a reorganisation known as the Schmidt Superheating (1910) Co., Ltd.

THE BETHLEHEM STEEL COMPANY

The well known American ordnance works, The Bethlehem Steel Company, have recently been favored by the Republic of Mexico with a large order for war material.

The contract calls for twenty (20) complete batteries of the firm's latest design of three-inch (3") mountain gun, with eighty-thousand (80,000) rounds of high explosive shell and shrapnel for the same, together with a number of six-pounder and three-pounder guns and mounts, and the necessary ammunition.

TRADE BETWEEN THE PHILIPPINES AND INDO-CHINA

The efforts for increased trade relations between Indo-China and the United States have resulted in inquiries for potash, which is an export product of Tonkin, says the *Manila Daily Bulletin*, and continues:—According to latest advices from Hanoi, Speidel and Company and other firms have been requested to send information by several commercial houses on the Pacific coast and in the east.

It is hoped that increased mutual trade relations between the neighboring French colony and the United States will tend to promote a Franco-American understanding in the Far East. For the last two years there was greater intensity in the traditional friendship of the two republics, and the opening of the American market to many French products since the new tariff went into effect has stimulated a move for additional reciprocity.

So far the balance of trade had little equity, specially as regards trade with French colonies, which it is conceded are exclusively administered for the French producer and a high protective tariff makes trade with Indo-China almost impossible.

With the exception of some P.2,000,000, machinery and tools, almost every other article imported into Indo-China was from France.

Manila cigars are imported in very limited quantities, but the good-will shown on the part of Manila merchants has already resulted in an increased consumption of the Manila product in preference to other imported brands, which fact clearly indicates the appreciation of the French people in Indo-China of American sentiment.

In like manner a large share of the machinery imports could be secured by Manila agents of American manufacturers and it seems at this time advisable for local firms to study the market and make proper connections in the aforementioned French colony.

RAILWAY MUSEUM FOR CHINA

For the purpose of diffusing railway knowledge among the Chinese people, the Minister of Communications proposes to establish a Railway Museum in Likuolo Lane behind the building of the Ministry, says a Peking paper, and continues:—The proposed Railway Museum will be placed under the administration of Mr. Hua Nan-kuei, Principal Technical Expert trained in France. The intention of the Ministry in establishing the Museum is to educate the Chinese officials and others as to the necessity of a net-work of railways in the Chinese Republic and also to show foreigners how the Railway enterprise is being pushed forward in this country at the present time. Although this proposed Museum is styled a Railway Museum, departments for the exhibition of telegraphic, postal and navigation articles will be added in future as they are also under the control of the Ministry of Communications. The Government is anxious to have the proposed Railway Museum established as soon as possible so that the Ministry of Agriculture and Commerce may copy the example and establish museums for agricultural and commercial exhibits.

It is stated that the first electrical plant to relieve the Arctic darkness will be erected at the Episcopal Mission at Point Hope. It will be designed, built and equipped by Dr. W. E. Temple, head of the electrical engineering department of the University of Pennsylvania. The site on which the plant will be erected will be 100 miles north of the Arctic circle. A huge windmill will be the prime mover, as the velocity of the wind at Point Hope is said to be rarely less than twenty miles an hour, but an auxiliary petrol motor is to be installed. The mission at Point Hope possesses about 400 inhabitants.

At the recent New York Automobile Show, 87 per cent. of the American cars had an electric engine starting equipment as a standard fitting and as an integral part of the chassis; 1 per cent. of the cars had acetylene starting outfits, and 4 per cent. air starters. As an optional extra electric starters could be fitted to 2 per cent., and mechanical starters to 1 per cent. The most striking point in connection with the above is that in only 5 per cent. of all cars shown was no provision made for some form of engine starter. At Olympia and Paris the percentage was probably the other way about, *i.e.*, possibly 5 per cent. of the cars had some such provision.

At present the greater part of the commerce to the region around Jerusalem passes through Jaffa. This port is a very inferior one and only small coasting vessels can penetrate within the belt of dangerous rocks that encircles it. Large steamers and other ships have to remain in the open sea a mile or two from shore and have their passengers and merchandise landed in large surf boats. Some time ago it was planned to establish a new port at Jaffa. It is only recently, however, that offers were made to obtain the concession. A French company expects to commence operations next summer. The work on the harbour will cost about £1,000,000 There is also a railway concession. A new line will be built from Rayak, on the Beirut—Damascus line to Lydda, on the Jaffa—Jerusalem line. This line will develop the rich plains of Esdraelon and Sharon, and it will be possible to journey from Jerusalem to Constantinople by railway *vid* the Aleppo branch of the Baghdad line. Jerusalem's position will thus be greatly improved.

period of thirty years would involve an annual charge of about Tls.197,500. A dividend of eight per cent. on the Council's shares, say Tls.3,500,000 would produce Tls.280,000, which after deducting the Tls.197,500 required for interest and redemption would give a balance of Tls. 82,500 for transfer to Municipal income. At the end of thirty years the income of the municipality would benefit to the extent of a clear Tls. 280,000 per annum.

The report of the Special Committee did not meet with the unanimous approval of the Council. In fact it soon became known that a majority of the Council were opposed to the transfer, and the Press and public seemed entirely averse to making the suggested change. The rejection of the proposal that the Electricity Department should cease to be a municipal enterprise, by an overwhelming majority of the Ratepayers, excited no surprise, but it was generally admitted that it was desirable to give more elasticity to the administration. Important extensions of the Riverside Power Station are contemplated, and the sum of Tls. 700,000 for additional plant was voted.

REPRESENTATION FOR BRITISH MANUFACTURERS, LTD.

An interesting and important development, and one which may be regarded as significant, is the establishment in China of Representation for British Manufacturers, Ltd. This Company was recently founded by nine well-known firms for the express object of establishing and maintaining staff representation in certain foreign countries for the sale of their manufactures. The founders were Sir William Arrol & Co., Ltd., Glasgow; John Brown & Co., Ltd., Sheffield; Cravens Limited, Darnall, Sheffield; Dorman, Long & Co., Ltd., Middlesborough; Thos. Firth & Sons, Ltd., Sheffield; R. W. Hawthorn, Leslie & Co., Ltd., Newcastle-on-Tyne; Hulse & Co., Ltd., Manchester; W. S. Laycock, Ltd., Millhouses, Sheffield and Simon Carves Coke Oven Co., Ltd., Manchester.

The East Asiatic Section of the Company is now being organised. There will be a head office at Peking and branch offices at Shanghai (which was opened in February), Hankow and Canton. Business in Eastern Siberia, Mongolia, Manchuria, Korea and the provinces of Chihli, Shansi, Shensi and Kansuh will be attended to by the Peking office, while the spheres of the other offices will be as follows:—Shanghai office: Shantung, Kiangsu, Anhui, Chekiang and Fukien; Hankow office: Honan, Hupeh, Kiangsi, Hunan, Kweichow and Szechuan; Canton office: Kwangtung, Kwangsi, Yunnan, Hongkong, Formosa and the Philippine Islands.

The Company is not a trading company; that is to say it does not exist to make profits for itself. Business will be negotiated for account of and in the names of the respective manufacturers. The Company desires to facilitate business with the existing commercial houses, whilst keeping the names and tradesmarks of the manufacturers who hold the shares, prominently before the users.

The organization in China is being carried out by Mr. W. Franklin Newman, General Manager, and the Assistant General Manager is Mr. S. W. B. Mc.Gregor, A.M. Inst. C.E., M.I. Mech. E.

VLADIVOSTOCK HARBOUR EXTENSION.

Engineer F. N. Gezekhus, the Assistant Harbourmaster of Vladivostock, is engaged in completing the details of the project for the extension of the commercial port and in making the necessary arrangements to let out the work on contract. He reports that the Ministry of Trade and Industry has already drafted the contract and that it will publish the advertisement for tenders after negotiations have been conducted with the city concerning the grant of the requisite lots of land along the shores of the harbour. It was expected that the result of the tenders would be made known about the end of March, or according to the New Style of reckoning, during the early part of April.

Independently of the foregoing, negotiations are being conducted with the War Department on the exchange of lots necessary for the extension of the port. The Imperial Duma has appropriated for this important work, under the Law of July 12th, 1913, about R. 6,750,000 (£675,000), which includes the sum of R. 300,000 (£30,000) for the construction of a floating dock. Work let out on contract will represent a value of something like R. 5,500,000 (£550,000). It has been decided to carry out the dredging operations under official supervision, and the Ministry has therefore ordered from Holland a complete dredging plant, which is due to arrive at Vladivostock, towards the end of 1914.

IRONWORKS IN SHANTUNG

A board meeting of the Shantung Railway Company recently considered a proposal for the establishment of iron works in the German Protectorate at an estimated capital outlay of m.10.000,000. It was resolved to propose that for this purpose the share capital should be increased by m. 10,000.000 (to m.70,-000,000). It is intended that for the first three years a 5 per cent. dividend out of capital shall be paid on the amounts paid up.

SHIPBUILDING IN CHINA

A smaller aggregate tonnage was launched in 1913 at the Shanghai shipyards than in 1912, but the establishments continued fairly busy with the construction of river steamers, lighters, tugs, and small craft generally. The New Engineering Works are building a river steamer, two tugs, two motor barges and two steel lighters; while the Shanghai Dock Company have on hand a steam collier of 6,000 tons, a twin-screw river steamer, a salvage tug which is to have engines of 1,200 I.H.P., other two smaller tugs, and a passenger tender. The yards of course are all comparatively new, but they are extensive, and some of them do a great deal of drydocking and overhauling business which does not figure in statistics of tonnage launched. They were, indeed, started as repairing and overhauling establishments, but it was found that new construction could be economically combined with this. The firms still, however, specialise to a large extent in their original line of work.

	1913.			1912.	
	Ves.	Tons.	I.H.P.	Tons.	I.H.P.
Shanghai Dock Co.	12	4,025	350	4,023	2,700
Kiangnan Works	21	3,239	1,840	6,164	3,000
New Eng. Works	20	1,093	40	2,870	1,660
The China Eng. Co. ..	7	130	—	—	—
	60	8,487	2,230	13,057	8,260

The Shanghai Dock and Engineering Company.

Vessel and Type	Registry	Tons	I.H.P.
Slavianka-Tug	Vladivostock	100	350
Laestrygon-Pontoon	Shanghai	3,000	
9 vessels-Lighters	,,	675	
1 vessel-Barge	,,	250	
Total-12 vessels of 4,025 tons and engines of 350 I.H.P.			

Kiangnan Dock and Engineering Co. Shanghai.

2 vessels-Steamers	Tientsin	543	1,350
6 vessels-Steamers	Shanghai	150	400
7 vessels-Motors	,,	218	—
3 vessels-Lightships	,,	90	
3 vessels-Pontoons	,,	358	
1 vessel-Hulk	,,	1,880	
Total-21 vessels of 3,239 tons and engines of 1,840 I.H.P.			

The New Engineering Works, Shanghai.

Chi Yue-Steam launch	Shanghai	15	40
Soo Hang-Motor Barge	,,	30	—
4 vessels-Motor launches	,,	23	—
2 vessels-Motor tugs	Vladivostock	25	—
12 vessels-Barges, lighters, etc	Shanghai	1,000	
Total-20 vessels of 1,093 tons and engines of 40 I.H.P.			

The China General Engineering Co., Shanghai.

7 vessels-Motors	Not stated	130	—

NEW RAILWAY STATION AT CHANGCHUN

The mild winter greatly accelerated the progress of the construction of the new Railway Station at Changchun, for which about Y.300,000 is laid out. The work was quite completed by the end of February, and the building is to be taken over shortly by the South Manchuria Railway Company from the contractor. The interior furnishing, installation of electric wiring, etc., will be finished during April, and the new premises will be ready for occupancy at the end of April. The new building is said to surpass in dimensions and architectural elegance even the Mukden Station Building, part of which is used as the Yamato Hotel.

THE CONTROL OF INNER MONGOLIA

PROJECTED RAILWAYS NORTH OF PEKING

The lessons on the value of railway communication which the Chinese Government have learned in the troubles which have beset the country during the past few years have been instrumental in firing the authorities to endeavor to bind the region known as Inner Mongolia closer to China Proper by the establishment of a series of lines connecting the newly opened "ports" with Peking. The miniature frontier war which developed between the Mongolian and Chinese forces as a result of the unrest in Mongolia demonstrated to the officials in Peking the slender character of the hold they had upon the rich regions lying outside the boundaries of the northern provinces, and prompted them to seek some other means than armed force to win the allegiance of the inhabitants, and secure a better footing to resist the invasion of possible enemies from across the Gobi Desert.

Frankly put, China feared the Mongols, but feared more the friends behind them, and she followed wise advice when she made the anticipatory move of opening certain towns in Inner Mongolia to foreign trade, thus giving other nationals a footing in tracts erstwhile forbidden from the China side but which were, from the Mongolian side, rendered a happy hunting ground for any Russian traders who might feel disposed to take advantage of it. That few did do so, has little bearing on the question. That the privilege existed, and that the jurisdiction of China over the region was seriously menaced, are facts which are common knowledge and which have compelled the Chinese Government seriously to consider the situation from its several view points. What is appreciated now is that lack of communication is the greatest handicap to any successful reassertion of authority on the disturbed Mongolia tableland, and to overcome that there is considerable thought being devoted to the initiation of a railway scheme to provide facilities which will bring the rule of Peking into respect among the settlers and the nomads who seem to have lost all idea of the fact that Peking pronouncements are to be regarded as anything more impressive than exhibitions of official aptitude with the brush or as purely mural decorations.

The main route from Kalgan to Mongolia—Looking towards Kalgan

The opening of the towns of Kweihwating, Kalgan, Dolonor, Chihfeng, and Taonanfu, in Inner Mongolia, was designed to give foreign traders certain commercial claims in the event of some untoward development in Mongolia, and the connection of these towns by rail will not only enhance trading possibilities, but will achieve the end which Peking has in view. The scheme which is talked of and which the Government hope will soon be developed embraces a wide area of country, as will be seen from the accompanying map. It is proposed to construct a line from Peking to Jehol and Chih-feng first; to follow that with a line from Chinchow, on the Peking-Mukden railway, to Chaoyang, and later to connect Chaoyang with Chih-feng; then to build a railway from Kalgan to Dolonor, and a connecting link with Chih-feng. Such a programme will bring an important section of the country under the immediate domination of the Capital, and will immensely commercially benefit a wide expanse. Practically the whole of the region tapped is rich from a pastoral point of view, and much of it is exceptionally good for grain production Avenues will be opened for large settlements, and the overpopulated areas in China Proper might easily be relieved of heavy surpluses to the benefit of Inner Mongolia. The Government have no misgivings about setting about the building of all of these lines at once, but financial stringency dictates a gradual programme of construction.

In all there would be about 800 miles of railway to be built to consummate the scheme, the approximate mileage being made up as follows:—

Peking to Jehol	140	miles
Jehol to Chih-feng	130	"
Chinchow to Chih-feng	180	"
Kalgan to Dolonor	150	"
Dolonor to Chih-feng	200	"
Total	800	miles

The connection with Taonanfu is not being considered in this scheme, the section between that city and Jehol having been promised to the Japanese to finance and construct. That is likely to be deferred for some time, for the Government feels that that particular line would contribute more to the strategic and commercial plans of Japan than it would to those of China. For that reason China intends to devote herself to securing the regions about her northern frontier, and as a beginning proposes to build the line northward from Peking for strategic reasons, and from Chinchow to Chaoyang for commercial ones. Chaoyang is the centre of a wealthy mineral area and the development of the latent riches is bound to take place immediately the question of transportation is solved. This line will be constructed as a branch of the Peking-Mukden railway, and probably from money loaned by the British and Chinese Corporation if sufficient earnings are not obtainable from the Peking-Mukden railway. The line from Peking to Jehol and Chih-feng will have to be built from loan money, but whether, it will be entirely British or not remains to be seen. Diplomatic strings have to be pulled to obtain a modification of the Scott-Muravieff agreement which precludes Great Britain from aiding any of her nationals in seeking railway concessions outside the Great Wall, and whether Russia will consent to such a modification is a moot point. The importance of such a system of railways is not lost upon the Mongols of Urga, or the Russians, and both have peculiar interests of a vital nature to preserve. The proposed lines are not calculated to assist either in that direction, so it is reasonable to suppose that both will use all possible efforts to throw obstructions in the way of their materialisation. The professions of friendship for China which Russia recently felt constrained to make when she advocated the withdrawal of foreign garrisons from North China might be, of course, strikingly signallised by a helping hand being extended now that China is wishful of establishing herself so that she can rule the turbulent tribesmen who have cost her so dearly in recent months. If it is, Russia will do much to remove the impression that has gained ground that she is the motive power behind the machinations of the Mongols, but if she does not she will merely strengthen the arguments that are adduced to prove that she has deep-laid plans for territorial aggrandisement at the expense of China.

Already China has evinced a desire to have the railways alluded to built by having had both the Chinchow-Chaoyang, and Peking-Jehol lines surveyed, Mr. D. P. Ricketts, Engineer-in-chief and General Manager of the Peking-Mukden railway, having conducted the work. The estimated cost of the Peking-Jehol line is set down at approximately £1,169,900, while that from Chinchow to Chaoyang is given at about $4,225,000, or, roughly, £422,500.

It is, of course, declared that a line to Jehol alone will not pay; but if a continuation is made to the market town of Chih-feng it is safe to assume that there will be more than sufficient traffic developed to cover working expenses and capital charges in very quick time, for that

centre taps a large and rich region which already exports and imports large quantities of products, despite the difficulties of transportation.

The territory traversed by these projected lines is in the mountainous belt through which the sweeping plains for Chihli give way almost abruptly to the great Mongolian tableland. The ranges generally run in the direction of north-east and south-west, and between them are rich valleys which are devoted to agriculture. Some general idea of the country, as well as the chief towns that will be touched, is given in the following descriptions of the proposed routes:—

From Peking to Jehol and Chih-feng

About 140 miles north-eastwards of Peking lies Jehol, or Chengtehfu, the old country-seat of China's monarchs, the spot to which Lord Macartney, in September, 1793, travelled to see the Emperor on behalf of the King of Great Britain. The chronicler of that Embassy stated that "it was probably for the first time that an English post-chaise rolled upon the road to Tartary," for Lord Macartney brought out his own carriage and travelled in it most of the way to Jehol, though some of the passes were so steep that he had to transfer himself to a palanquin while coolies hauled the post-chaise over the steep and rough way. The post-chaise, with its high-swung body, its springs, and general appearance of fragility, was a tremendous source of interest to the natives, and while perhaps no other vehicle of the kind has traversed the same route in the 121 years that have since elapsed, the descendants of those who were amazed at the strange contrivance of the "outer barbarian" have in store for them a greater surprise when the locomotive and its train of cars rushes over country which has not been accustomed to vehicles speedier than the springless Peking cart, a mule litter, or a palanquin, and which has mostly been famed for the spectacular processions accompanying the Imperial Court.

Potala Miao, Jehol

The road to Tartary is, too, much the same as it was when Lord Macartney traversed it. The same highly cultivated plains and sprinkling of grave yards just outside of Peking, with similar willows, poplars, and mulberry trees marking the country, are to be seen, and twenty odd miles away the same foothills up which the Embassy toiled have still to be surmounted by the traveller, with steeper passes rising beyond and creating scenery "pleasing and romantic," but perhaps not so populated as they were then with "wild goats and wild horses which were seen scampering along the hills," though men can no doubt still be found "ascending precipices—or virtual precipices—to find spots fit for cultivation." And the same Great Wall which so impressed the Embassy still crawls over the crests of ranging hills, then known as the Tartarian mountains, "descending into the deepest valleys, crossing upon arches over rivers, doubled and trebled in many parts to take in important passes, and interspersed with towers or massy bastions at almost every hundred yards, as far as the sight could reach, presenting to the mind an undertaking of stupendous magnitude." The travellers then, as now, approach the wall "by a steep ascent until they come to what is called the southern gate—which is thrown across the road which it passes over the summit of a range of hills in most parts inaccessible." As the road advances to Tartary it becomes more rugged and runs parallel with the ranges. Near Jehol the Embassy was greatly interested in what attracts all travellers to Jehol, the extraordinary perpendicular formation of indurate clay which rises on a mountain top like an inverted pyramid some 200 feet in height, and which is "left as a monument to the height of the ancient surface of the globe in this particular part of it." The chronicler of the Embassy records that the ascent to Tartary is such that some parts of it have been ascertained to be 15,000 feet above the surface of the Yellow Sea. Amidst these high grounds, and a little beyond the inverted pyramid, the mountains recede more from each other and open the valley of Jehol, with its Imperial Palace and garden, its temples and monasteries, "some set on gentle elevations, some on the plain, and some on a high hill approachable only by rocky stairs of difficult ascent," the valley being watered by a stream gliding gently through it and wafting in its sands many particles of gold."

Jehol is not a commercial centre by any means. It lives on past glory, but is the centre of administration for what is now northern Chihli province. A garrison is stationed there and rail connection to this place alone would be for purely strategical purposes. The collection of houses which is glorified by the name of city is not surrounded by walls, but is built upon the gently sloping hills, and from the distant passes looks picturesque by virtue of the temples and the trees which cluster about. Climbing up the highest hillsides and surrounding the preserves is the wall of the Imperial Palace, six miles in extent, which was built by the Emperor Chien Lung, over 200 years ago. "Here," writes Mr. John Hedley, in his 'Tramps in Dark Mongolia,' "Chien Lung and some of his successors were wont to go hunting in the Imperial forests still further north, but, in 1861 when the French and British troops battered at the gates of Peking, Hsien-feng, the then unworthy occupant of the Dragon Throne, fled to these hills and there ended his miserable reign. Since which time no Emperor has set foot within the grounds, an uneasy superstition rankling in the minds because the Emperor died there." The valley in which the temples stand is surrounded on all sides by lofty trees. The temples, five in number, are the habitations of Lamas, but the most important is the Patola temple, a replica of the Patola of Lhassa. It has nine tiers of windows, and houses 700 lamas. Standing at either end are magnificent specimens of Buddhist dagobas, topped with golden crests.

The survey of the route from Peking to Jehol for railway purposes disclosed that a line could be built with suitable grades, but beyond Mi-yun-hsien, about 43 miles from Peking, a considerable amount of heavy rock cutting and tunneling would have to be done. The line would practically be an extension of the railway at present in operation to Tungchow, and from that place to Mi-yun-hsien the country is fairly easy, but two bridges would be necessary, one over the Yun Liang-ho, at Shun-yi-hsien, 300 feet long, and the other over the Peiho, 900 feet, about 2½ miles south of Niu-lan-shan. From Mi-yun-hsien to Shih-hsia the line crosses the Chao-ho on a 700 ft. bridge about four miles from Mi-yun-hsien, and leaving the Chao-ho takes a pass to the north via Mu-chia-yu with a grade of 1 in 100, and with a short section of somewhat heavy rock cutting. Another bridge of 300 feet over the Mang-niu-ho, and country giving a general grading of 1 in 400, takes the line to Shih-hsia, beyond which heavy cutting is again necessary. A tunnel 300 feet long leads to Hsin-kai-lung, and the line, developing to the east, crosses the Chao-ho again on a bridge 700 feet long, and turning north through an unavoidable tunnel of 600 feet enters directly at the front of the town of Ku-pei-kow, at the Great Wall. In passing Ku-pei-kow the space is very limited between the Wall and the river, and it will be necessary to utilise the space occupied by the Wall for a short distance. From this point a more northerly route than the main road is taken, easier grades being available (from 1 in 100 to 1 in 200) until La-ho-kow is reached. The line then sets due north with grades up to 1 in 70, to a tunnel 4,000 feet long through the Shih-pa-pau-ling, when a down grade is obtained of 1 in 100 to a valley, past Ping-fong-tzu, and up again by a 1 in 300 grade to the Pien-lung pass, whence another tunnel 2000 feet long on a 1 in 100 grade is necessary, leading to the village of Nau-tsan-tun. A wide valley through which flows a tributary of the Hsin-chao-ho is availed of to Tatun, easy grades then developing the valley of the Lan-ho the line skirting the foothills on a 1 in 70 gradient, with a short tunnel 500 feet long through a rocky spur at Wu-mu-liang. Several unavoidable bridges are necessary as the line tortuously traverses the Lan-ho valley, much benching and curves with a 2,000 feet radius being required. At Su-tao-ho the line finally crosses the Lan-ho, and, eventually passing through a tunnel, will cross the Yu-tze-ho and enter the Mong-niu-ho valley, skirting the foothills, on a grade of 1 in 70 to 1 in 80, finally emerging through a tunnel of 3,000 feet into the Jehol valley. The exact approach from Kwan-jen-ling to Jehol will require considerable time to locate, as the line will have to develop round the sides of the valley, to the west of Jehol, making the city through some of the poorer suburbs. The station yard will be on flat open ground to the south of the city and on the west bank of the river.

The line from Peking to Jehol crosses the watershed of the Pei-ho on the south, and the Lan-ho on the north, meaning a general rise in grade of over 1,600 feet, and can be built at a comparatively moderate cost considering the mountainous nature of the country.

No survey has been made of the route to Chih-feng, but the line would probably follow the valley of the Je-ho rise over the Huang-hai range, between Mo-ke-men and Wang-yeh-tien. It would then drop down the valley of a tributary of the Lacha-ho for some distance, or follow the main road via Liang-pu-fu, and Ta-lo-tu to Chih-feng. The country is mountainous, but the intervening valleys permit of comparatively easy

gradients, and construction might be kept within a cost which would permit of trade being developed to pay cost of operation and interest on the capital outlay within a reasonable time.

From Kalgan to Dolonor.

The Mongolian tableland rises almost abruptly from the plain upon which Kalgan stands, and practically the only difficulty in connecting Dolonor with the railway now operating between Peking and Kalgan, is the rugged range of mountains which lies behind Kalgan and which has in the centuries stood as the barrier against the free advance of Mongol hordes into China. Once that range is surmounted the route over the tableland offers no difficulties, being mostly open undulating country.

Part of a camel caravan loaded at Kalgan and ready to start across the Gobi Desert for Urga carrying goods for the British American Tobacco Company. The Europeans in charge are Messrs. Rusted (first on the left) and Schroeder (second on the left) of the British-American-Tobacco Company's establishment at Kalgan.

At present the road to and from Mongolia traverses what is known as the Kalgan pass, virtually the rocky, sandy bed of what is, in the rainy season, a mountain torrent, and all merchandise is carried either by camels, mules, pack ponies, or in carts. In the dry season Kalgan is a busy city and before the railway was extended towards Shansi it is estimated that altogether some 10,000 animals passed through each day bound in one direction or the other. Even at the present time the traffic from the surrounding country is very large, the Mongolian caravans bringing in soda crystals—to be converted into blocks at Kalgan for transportation to Peking and elsewhere,—salt, fur, camels' hair, wool, medicines, hides, etc. The soda crystals mostly arrive in small carts with wooden wheels, without tyres, capable of carrying some 650 lbs, and are brought from lakes sometimes more than 300 miles distant. The outward caravans and carts carry European articles, piece goods, tea, oil, cigarettes, candles, etc. At one time the whole of the tea trade of Russia went through Kalgan and over the Gobi on the backs of camels, thousands of these animals being employed. They are also used to transport a large quantity of Chinese merchandise for sale in Mongolia.

From Kalgan to Dolonor the distance is some 145 or 150 miles. The road leads through the gate in the city wall, proceeds between rising hills along the bed of what is a raging torrent when the heavy rains fall, and passes through the Great Wall, which runs down on either side of a well-defined cleft in the hills. Chinese Customs officials here collect taxes from all traders going to or coming from Kalgan, the passage being just broad enough to permit one cart to pass at a time, thus obviating any possible running of the Customs. Thence the road, rough, and difficult to travel on foot leads between rising mountains up a gradual ascent for ten miles, when it becomes precipitous and increasingly rough, to the level of the plateau, fifteen miles from Kalgan. The ascent is 2,600 feet. The township of Han-no-pa, or Pan-pa, is the starting off point for all caravans crossing the Gobi or making for Dolonor or other Inner Mongolian districts. Several roads lead to Dolonor, the shortest being through Shih-pa-tai, Pai-miao-tzetan, Erh-to-wa, Tan-chang-mu-tzu, Hsiao-ho-tzu, Shang-tai-ho, Talen-ti, Ha-pa-chiao and Chapeng. This is a track across an undulating prairie, after a mile of rough ascent from Han-no-pa, bearing N. N. E., past rounded hills and over soil which in the dry weather makes an easy road. Ten miles of travel brings the small village of Shih-pa-tai, a collection of about forty houses, into view. The country in the vicinity is cultivated, wheat and millet thriving, and for the next 33 miles to Erh-to-wa the road runs through well cultivated Chinese farms, small villages being passed and flocks of sheep and herds of ponies and cattle being seen. The wells are all good. For fifteen miles from Erh-to-wa the country is still undulating and cultivated, and then breaks into valleys from one to three miles across, separated by hills from 200 to 400 feet in height. All the valleys are cultivated. Thirty miles from Erh-to-wa is the village of Hsiao-ho-tzu, and ten miles further is Shang-tai-ho, the village of Ping-to-no being between, but off the road. In this village there is a Belgian mission, the mission people farming in the spring and summer, and hunting in the winter. The country is more level and is cultivated up to Shang-tai-ho, where there is a remount station maintained by the Chinese Government, the horses being purchased in Mongolia and sent to this station to be kept till drafted out for use in the Chinese army. A number of Ili mares were introduced here for breeding purposes, but during the recent troubles the Hunghutzes managed to steal many of them.

A resting place on the trade route north of Kalgan.

A plain stretches from Shang-tai-ho for 23 miles to near Ha-pa-chiao' where small hills about 100 feet high cluster. The country is used solely for pasturage, grass being exceedingly good in season. Dolonor is some

30 miles distant, the road leading over a level plain, with hills four to five miles away, for about ten miles, when an easy up-grade leads through small hills and sandy country, small lakes occurring near Cha-peng, about ten miles from Dolonor, and continuing practically to Dolonor, where they become marshes. Ducks, geese, and other water fowl abound. A few miles from Dolonor heavy sand is entered, and the road winds among sand dunes to the south gate of the city.

Dolonor, or Lama-miao, as it is very often called, is situated virtually due north of Peking in latitude 42 deg 16 min. A small mud wall surrounds it, the shape of the city being oblong, about half a mile in width from east to west and two and a half long from north to south. The houses are of mud, and the population numbers about 30,000. This is the centre of a great horse trade, ponies being brought in from all over Mongolia for sale to buyers from China. Up to 50,000 are sold annually, and in addition large numbers of cattle and sheep are also disposed of. There are many shops, most of them being devoted to the sale of idols and other impedimenta of temples. Two miles from the town are situated two large well kept temples containing over 1,000 priests, the temples having been built in the time of the Emperor Kiang-hsi.

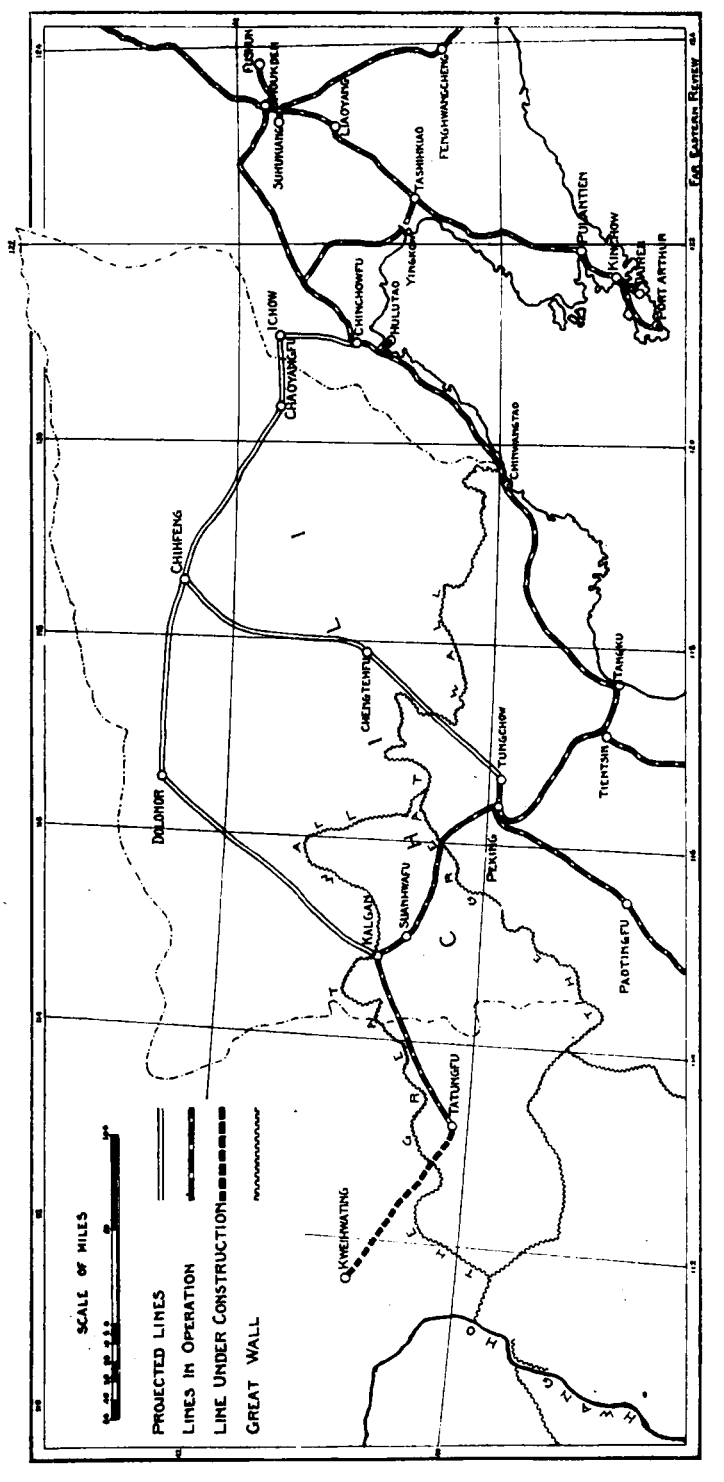
From Dolonor to Chih-feng

The road from Dolonor to Chih-feng runs mostly east-southeast, descends from the Mongolian plateau and crosses the old Imperial Hunting Park, passing through the new district city of Chui-tzu-shan and the towns of Pien-chiang, Pei-ting-tzu and the district city of Liang-pu-fu. There is, one route running from this city to Chih-feng, about 50 miles, almost direct to Chih-feng, another goes south-east through Wang-yeh-fu, and then to Chih-feng. The country is mountainous or hilly practically all the way, the road passing over the southern end and outlying hills of the Kingh-an range.

From Dolonor the road is sandy for about four miles, when the hills close in, and from the village of Chuan-wa-chao there is a rise of one in sixty for two miles, and a small hill 250 feet above the level of Dolonor is crossed, the ascent and descent being at about eight degrees. Descending to the south, a valley running east and west for about four miles is entered, the hills being about 300 to 500 feet in height. The country is grass lands, with very little cultivation, the Chinese farms which marked the western country being absent here. Four miles from this valley the Lwan-ho is crossed, the ford being about 70 yards across, and running two to three feet deep. Beyond, the country is sandy, dunes being continuous, but 25 miles from Dolonor more hills are ascended, and then follows undulating land with small short rises and descents. About are grassy plains but very little cultivation, with hills later on breaking the valley. Passing other valleys cultivated by Chinese the road rises for a mile and a half and then descends through a deep gorge 400 yards wide and two miles long, at a slope of one in ten, later rising at one in eight, and entering a narrow valley fringed with rugged hills. A few farms, with sheep, cattle and horses, break the monotony to the small village of Tung-tzu-kou, whence the road crosses the Ka-ta-ga river, and enters a narrow defile, eventually ascending through a valley for two and a half miles, the road rising at a four degree slope through timbered hills. A descent of three miles at four degrees brings into view a well cultivated valley where the small village of Kao-chia-tien nestles among Chinese farms.

For ten miles the road traverses this fertile stretch, grassy hills rising to 600 feet on either side, and for eight miles descends at about one degree crossing a small stream twice, and eventually paralleling running water for two miles until the intersection of four valleys is reached, where a Chinese village stands. The hills on each side of the valley are rugged, and continue so to the Tai-ku-ling pass, which is reached after a climb of 1,000 feet in a few miles, the slope being one of from ten to twelve degrees. The road then descends for eight miles to Tao-pa-tzu-men, passing through a close and intersected country with grassy hills, the basin of the valley

RAILWAYS TO CONTROL INNER MONGOLIA



MAP SHOWING THE RAILWAYS LINES TO BE IMMEDIATELY BUILT, AND THOSE WHICH ARE PROJECTED WITH A VIEW TO SECURING THE HOLD OF CHINA UPON INNER MONGOLIA. THE CITIES OF KWEIHWACHANG, KALGAN, DOLONOR, CHIHFENG, AND HULUTAO, SHOWN ON THIS MAP ARE FIVE OF THE SEVEN RECENTLY DECLARED OPEN TO FOREIGN TRADE WITH A VIEW TO INTRODUCING NEW FOREIGN ELEMENTS INTO THE REGION TO COUNTERACT RUSSIAN AND JAPANESE INFLUENCE.

LINKING UP KIANGSU AND HUNAN

AGREEMENT SIGNED FOR RAILWAY FROM NANKING TO CHANGSHA

On March 31 at Peking an agreement was signed between the Chinese Government and the British and Chinese Corporation for the construction of a railway linking up Kiangsu and Hunan. This line is to run from Nanking to Ningkwofu and Hweichow and thence through Nanchang to Pinghsiang. The line in operation from Pinghsiang to Chuchow will be taken over by the Corporation.

Branches will be built, from Ningkwofu to Wuhu and from Hweichow to Hangchow.

COMMERCIAL LOANS IN CHINA

A Peking paper reports that in view of the recent Hanyehping loan problem the Government has drawn up a set of new regulations governing the conditions for the merchants borrowing foreign loans. Recently the Government sent telegrams together with these regulations to the Civil Governors and diplomatic officers of the various provinces instructing them to publish them to the public and give due warnings to the merchants. These regulations are as follows:—

(1) Any merchant who borrows foreign loans to undertake business, no matter whether the loan is a new one or has been discussed in the past, should first make a report to the Ministry whose control his occupation is subjected to.

(2) When circumstances necessitate the merchant borrowing foreign loans he should first make a report to the Ministry stating its use and the sources from which he can derive money for its repayment.

A Caravan preparing to start after a night's camp on the Kalgan-Urga route.

About 1,000 miles of construction is involved. The line is of great importance both politically and strategically, and in some quarters it is considered that the securing of the Agreement gives reality to the British claim to commercial predominance in the Yangtsze Valley. There is to be a British Engineer-in-Chief, Chief Accountant and Traffic Manager. The term of the loan is forty-five years and the security the line itself. The interest on the loan will be five per cent.

A flying survey of the line has already been made. The undertaking will necessitate the flotation of loans amounting to £8,000,000.

The British and Chinese Corporation is to take over the Shanghai-Hangchow-Ningpo Railway, and as a preliminary the Government has been endeavouring to arrange to buy the line from Kashing to Hangchow from the Chekiang Railway, Company. The line from Shanghai to Kashing has already passed under Government control. At the end of March some of the shareholders were protesting against the arrangement for transforming the Chekiang Railway into a State line and the matter has not yet been satisfactorily settled.

Mr. A. W. U. Pope, C. I. E., the General Manager of the Shanghai-Nanking Railway, has been appointed an adviser to the Board of Communications at Peking, and was to leave Shanghai for Peking early in April. He has been succeeded in the General Managership of the Shanghai-Nanking Railway, by Mr. A. C. Clear, M. I. C. E., Superintendent of Way and Works.

At the annual meeting of ratepayers of the British Concession, Hankow, a committee was appointed to consider a scheme for running an electric tramway through the Concession.

(3) Merchants who have been allowed by the Ministry to borrow foreign loans should submit the agreement for such a loan to the Ministry for its approval. No agreement shall be considered as valid if it is signed before the Ministry approves it.

(4) Before the signing of an agreement the merchant should first inform the Ministry, which will send a delegate to witness the signing and no loan agreements shall be considered as valid unless they have been subjected to the above processes.

REFRIGERATOR CARS ON SIBERIAN RAILWAY

The Bourse Committee of Omsk has sent a petition to the Russian Department of Commerce and Industry, which in turn has handed it on to the Railway Bureau, regarding the construction of shore refrigerators for the preservation of valuable fish products at the towns of Nikolaevsk, Khabarovsk and Sryotensk, and also the equipment of refrigerator cars for the conveyance of fresh "keta" to the inland markets during the warm season. Although it is hoped to satisfy these requirements, when the entire Siberian lines are equipped with proper refrigerator buildings, in accordance with the general plan for the adaptation of the system to railway transport, nevertheless, the Railway Administration is anxious to meet the wishes of the petitioners and the needs of the fishing industry, through the provision of refrigerator cars from the railway itself, and to this end it has invited the chairman of the Siberian sub-district committee for the regulation of freight transport in bulk on the railways, at the town of Novo-Nikolaevsk, to explain the extent of the requirements of the fishing industry both as regards shore cold-storage warehouses and refrigerators cars. The chairman of the committee in his turn has applied to the Khabarovsk municipal administration for data with reference to the desirability of the erection at the place of a shore refrigerator, together with statistical information as to the annual export of fish products from Khabarovsk, the precise character of such goods and their distribution monthly, including the destination of the largest shipments. The Mayor of Khabarovsk has handed on this request to the Bourse Committee for reply.

RAILWAY TUNNELLING IN CHINA

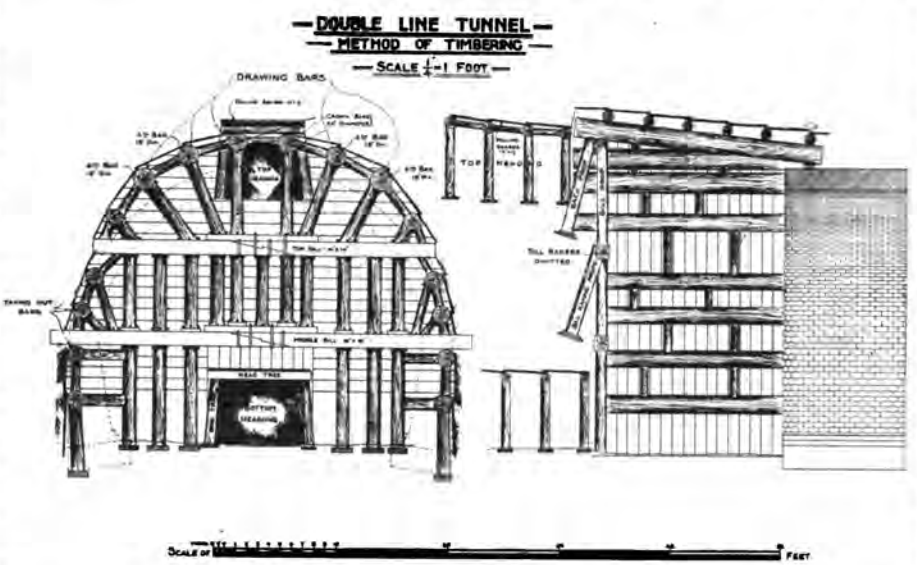
From a Paper read before the Engineering Society of China at Shanghai by Mr. M. H. Logan.

It has been the author's good fortune to have been connected with two great engineering enterprises in which tunnelling played a great part, namely, the hill section of the Assam-Bengal Railway in India, and the British section of the Kowloon-Canton Railway on the mainland of China; the first of these railways traversed from necessity the lower slopes of a valley in which the spurs and bluffs were the remnants of old slips from the main hills, and the tunnelling involved was of a very heavy character; the second railway pierces the Kowloon range of hills in a tunnel nearly a mile-and-a-half in length and then skirts a rugged indented coast line in which are three other tunnels through varying material. It is the author's intention, in this paper, to describe the construction of the tunnels on the Kowloon-Canton Railway, British section, of which there were five, of the following lengths:—

Now.	1.	150 feet.	
,,	2.	7,212 ,,	(Beacon Hill Tunnel)
,,	3.	329 ,,	
,,	4.	180 ,,	
,,	5.	923 ,,	(Taipo Tunnel)

All these tunnels, with the exception of the Beacon Hill Tunnel, were built for a double line of rails, the latter on the score of cost being built for a single line only.

The Kowloon-Canton Railway is built on the standard gauge of 4ft. 8½in. and starts at a point on the mainland opposite the centre of the city of Victoria on the island of Hongkong; traversing a piece of reclamation some 40 acres in extent it enters the foothills in a cutting, the vertical depth of which is for several chains over 150ft. and in some places actually 200ft.; the spoil from this cutting was needed for forming the reclamation, otherwise a tunnel would most certainly have been the more economical course to adopt; approaching the main range of hills which divides the harbour of Hongkong from the waters of Mirs' Bay, the railway runs in heavy cutting through a series of foothills and enters the Beacon Hill Tunnel at a point some three miles from the terminus. Emerging from the Beacon Hill Tunnel on the far side of the divide from Hongkong it continues down the Shatin Valley for some two miles and again strikes the sea coast which it follows for about eight miles to Taipo, Mile 13, where it again turns inland and passing the watershed in another very heavy cutting it enters the Sheungshin Valley and follows this to the Chinese frontier at the Samchum River. The work on the British section of the railway is, with the exception of the last five miles, of a very heavy character throughout.



THE BEACON HILL TUNNEL.

The Kowloon range of hills through which the Beacon Hill Tunnel passes is of granite formation, but the rock is by no means regular, and is for a considerable portion of the tunnel much distorted and decomposed. The approach cuttings at either end of the tunnel were begun in May, 1906, and two shafts were also commenced a month later, the first 98ft. in depth at a point some 350ft. in from the south portal, and the second at the north portal.

Difficulties with labour were considerable at the start of the work, the unhealthy condition of the valleys at the faces of the tunnel proving a great obstacle, malaria fever of a virulent type being prevalent and causing a large amount of sickness among the labour force, both foreigners and Chinese. Chinese contractors from Hongkong were unwilling to undertake work except at rates which were exhorbitant and labour was consequently difficult to obtain; under such conditions it became necessary to import labour, and arrangements were made to obtain a number of skilled tunnel men from India. The large amount of tunnelling on the hill section of the Assam-Bengal Railway completed in 1903 had produced a number of men well trained to such work, and the author being in touch with some of these men was able to obtain within a few months a very useful nucleus of a skilled labour force with which to attack the formidable task of driving a tunnel a mile and a half in length in a country where climatic conditions were adverse and labour with any experience of underground work difficult to obtain. About 150 men were actually imported from India and were followed at intervals by others who were employed on the works as required. The first batch of Indians included men of several races—Pathans from the north-west frontier of India, Mekranies from the littoral of the Persian Gulf, Punjabis, both Sikhs, Hindus, not Sikhs, and Mohammedans and Purbeahs or Hindustanis from the United Provinces; some of these men had but recently worked on the Nushki Tunnel on the Quetta-Seistan Railway on the extreme northwest frontier of India where machine drills had been used and were, therefore, most useful in handling the compressed air-drills which were used on the Beacon Hill Tunnel.

During the months of June, July and August, 1906, in spite of heavy rains and malaria, much development work was done at both faces of the tunnel. Service roads were made, sites for workshops, Power-houses and quarters for the labour force were levelled and buildings erected; reservoirs for water supply were built and a service line of railway on the metre gauge some 2½ miles in length connecting the south face of the tunnel with the main stores depôt at Taikoksui in Hongkong harbour was laid.

The shaft sinking proceeded slowly throughout July and August. Sickness among the labour force, and the large amount of water met with rendering good progress difficult. On September 16, 1906, occurred a disastrous typhoon which wrought immense havoc in Hongkong harbour, and destroyed practically the whole of the temporary matshed quarters and workshops at both faces of the tunnel, resulted in the flooding of the shafts at either face and the drowning of the pumps. The shaft at the north face had by this time reached formation level, and a setting had been got in at each face of the heading, but the sudden flooding, caused by the heavy rain which accompanied the typhoon, caused a cave about fifteen feet from the bottom, and made it questionable as to whether it was worth while attempting to "pick up" the caved-in portion and re-timber it or to wait for the approach cutting. A second typhoon of greater intensity followed close on the heels of the first towards the end of the month, and for the second time in a month the work was brought to a standstill; the temporary quarters and workshops, which had again been erected during the interval, being all levelled to the ground, and the shafts again flooded. This second flooding caused the abandonment of the shaft at the north portal, and efforts were concentrated on the shaft on the south side. At a depth of sixty feet a very tough inelastic decomposed granite was met with, which was badly fissured and yielded an immense amount of water; two Pulsometer pumps of 3in. and 2in. delivery were the only pumps available at the time in the Colony, and it was with the greatest difficulty, baling also having to be resorted to, that the shaft was kept sufficiently free of water to enable the work of sinking to be continued. This tough decomposed granite continued to the bottom of the shaft and on into the hill for several hundred feet, and it was a most intractable material to deal with, tough as leather and yet explosives had very little effect upon it. A pick re-bounded from it and holes could be drilled into it only with difficulty, the grains of quartz continually falling in from the sides of the hole and jamming the drill. A full charge of dynamite produced

practically no effect upon it, and a progress of about 1ft. 6in. in twenty-four hours in either shaft or heading was all that could be effected for several weeks. This toughness was undoubtedly due to the large amount of water with which the material was charged, and when the heading from the approach cutting joined up with the shaft headings and enabled the hillside to be thoroughly drained, a great improvement was noticeable, and the material was then very much more tractable. During the sinking of the last 35ft. of the south face shaft and also for the first 300ft. of the heading, water was encountered in

KOWLOON-CANTON RAILWAY.—Tunnel No. 4.

great quantities, neither candles nor lamps could be kept alight and a small dynamo driven by a Hornsby-Akroyd oil engine was temporarily installed to light the shaft and heading. Much trouble was also experienced with fuses for the explosives owing to the extreme dampness, and eventually submarine fuses were obtained and fired electrically with varying success.

During February, 1907, an 18in. Schram's air-compressor was installed at the south face and towards the end of the month the drills were got to work, both in the shaft headings and the heading from the approach cutting.

BOTTOM HEADING, NORTH FACE.

The bottom heading at the north face was begun early in January 1907, and made good progress through decomposed granite of a somewhat different character from that met with at the south face. Although better progress was obtained at the north face than at the south, considerable weight came on the heading timbers and it was necessary to close poll all round and to use cill stretchers at the foot of the side trees.

The size of the bottom heading was 8ft. 6in. by 7ft. clear of timber and was sufficient to admit of a metre gauge road being laid up to the working face. The timbering used in the bottom heading at the north face for a length of over 500ft. in from the portal consisted of head tree 12in. by 12in. Oregon pine, side trees, 12in. by 12in. Oregon pine, set on 14in. by 14in. hard-wood foot blocks, cill stretchers 10in. by 10in. Oregon pine, poling boards 12in. by 2in., settings 3ft. 6in. apart. Side trees were given 6in. sprag or rake inwards. Three eight-hour shifts were worked at the beginning of the year and the Indians driving the heading made very good progress through the first 500ft, averaging two settings or 7ft. in the three shifts. At about 500ft. in from the face the ground began to harden and a partially decomposed rubbly rock was met, with veins of decomposed felspar, and the progress, which had up to this point been good, began to fall away; the ground was too hard to mine with the pick alone, and the machine drills, which had by this time been installed, jammed constantly in the rubbly fissured rock. Explosives, too, were most ineffective, the backs or fissures in the rock rendering it difficult to obtain a shattering or even shaking effect; progress continued slow for several months as long as this intractable material lasted, and heavy timbering was required, weight coming on the timbers as soon as the ground was excavated. The great difficulty in driving this heading was to obtain a sumping effect on account of the seamy and decomposed character of the rock. The general scheme of drilling was as follows:—Five or six holes, averaging 5ft., were drilled round the centre of the heading face, radiating towards the centre in the form of a cone; at the sides, bottom and top, other holes were drilled parallel to the direction of the heading; the centre holes were each charged with three to four sticks of blasting gelatine and were given shorter fuses than those on the outside, all being lit simultaneously with a piece of blasting gelatine stuck on the end of a stick and set alight This method of firing was found to be the most satisfactory, two men being employed to fire. The progress obtained in the decomposed rock at each round was generally not more than a foot or 18in., and it was then necessary to dress the face down with picks before the drills could be got to work again. The drills were constantly jamming in the fissures and old holes, and were withdrawn with difficulty. As long as the decomposed rock lasted it was not found necessary to take down the drills off the heading bars on which they were mounted, and they were simply slewed round away from the face and left; as soon as a round of shots had been fired a man went to the face and turned on a compressed air-cock which discharged air into the heading and cleared the face of smoke. In about twenty minutes the men were able to get back to work. The original scheme in driving the tunnel was to push right through with a bottom heading and to put in break-ups at intervals of 500ft., but the slow progress obtained in the very intractable material at the south face of the tunnel during the months of October, November and December 1906 made it seem probable that the completion of the tunnel might be delayed beyond the estimated time, and it was, therefore, decided to put down another working shaft at the north face of the tunnel, at the furthest practicable point in from the portal. This third shaft was begun in January 1907, and was of a total depth of 268ft. It was estimated that it would be down to formation by the end of May, but owing to great delay in the delivery of a sinking pump and other machinery ordered from England which did not arrive until the middle of July, it was well on into September before the shaft reached formation level, and the difficulties encountered in sinking it were great. The size of the shaft was 13ft. by 10ft. clear of timber and as it was intended to use this shaft throughout the construction of the tunnel special twin cages and a hauling engine were ordered from England for the purpose. The first 70ft. was in what is known in the colony of Hongkong as red earth, a form of decomposed granite not difficult to excavate, but requiring timbering and close polling. At 70ft. rock was struck and with the rock water was encountered, which increased in quantity as the shaft went down and the rainy season came on.

The first 30ft. or so of the shaft was sunk with an ordinary jack-roll or wooden windlass and small wooden skips, but from this depth to formation the work of hoisting was performed by an 8 H.P. Lidgerwood hoisting engine with the drum braked by a friction clutch, and iron crane skips containing a third of a cubic yard. The head-gear for the permanent hoisting plant, (which arrived late after the completion) of the shaft was erected at an early stage and consisted chiefly of 14in. by 14in. Oregon pine square timber framed and bolted together. The timbering of the shaft consisted of framed settings of 10in. by 10in. timber 4ft. apart with 1½in. polling boards. A large sinking pump had been ordered from England early in January by cable and was expected to arrive in March, but was not actually delivered until the middle of June, and then with some of its parts missing, so that it could not be utilized until the end of July, and the bulk of the sinking was done under considerable difficulties with two No. 6 Pulsometers, raising 12,000 gals. per hour, working in two lifts, the bottom one pumping into an iron tank fixed at about 85ft. from the surface and the second pump lifting the water from this tank to the surface. In addition to the pumps the hoisting engine and skips were largely employed in lifting water, and baling added largely to the cost of sinking this shaft.

The first 70ft. were sunk by departmental labour, but after this depth had been reached a piece-work contract was arranged with three Italian miners and the remainder of the work in the sinking of the shaft was carried out by them with a grit and determination, working as they were under most difficult conditions, deserving of the very highest praise. Explosives, timber cut to size, all tools and labour for sharpening same,

KOWLOON-CANTON RAILWAY.—Taipo Tunnel, South Face, March, 1908.

coal and all labour connected with hoisting, and lights were supplied to them, and their contract lay in providing labour for excavation and timbering. The rock at this point of the hill was hard, but full of fissures and drilling and blasting were as in the heading matters of difficulty; the fissures were mostly nearly vertical and contained bands of decomposed material, which caused the drills to deflect and jam frequently. A line of air pipes was run up the hill to the shaft from the power house at the portal early in March and extended trials were made with the machine

drills, but the constant jamming in the fissured rock induced the miners to abandon their use and to resort to hand-drilling. The same methods of drilling as were adopted in the heading were resorted to and a series of holes sloping towards a central point in the form of a cone were drilled being heavily charged and fired with short fuses so as to provide a free surface for the straight downward holes to blow to. Progress in the fissured rock was slow and was further retarded by the presence of large quantities of water which found their way in through the joints in the rock, and by the absence of a suitable pump to deal with such quantities. At a depth of 160ft. the hoisting rope began to give trouble, the continued oscillation of the buckets causing the unwinding of the lay of the rope, and it became necessary to reverse the rope and to put in special guides for the skip, the skip itself being rigged on a frame with shoes to fit the runners which were fixed to the shaft timbers. The late delivery of the large sinking pump, the permanent winding engine, and the hoisting cages were responsible for much of the difficulty that was experienced in sinking this shaft. The fissured rock continued down to a depth of 200ft., but after this depth the rock became more solid and the principal difficulty was with water. The shaft was used throughout the construction of the tunnel, and a large amount of the excavated material was hoisted through it thus leaving the portal lengths free for bringing in lining material, timber, etc.

KOWLOON-CANTON RAILWAY.—Taipo Tunnel, South Face, July 5, 1908.

BREAK-UP LENGTHS

The original scheme, as has already been mentioned, was for a bottom heading to be driven throughout the tunnel and for break-ups to be formed at intervals of 500ft., thus providing two additional working faces in each break-up. It was not found possible to adhere entirely to this programme and eventually break-ups were formed at distances of 250ft.

The face lengths were got out and turned without much difficulty 15ft. lengths being adopted with five drawing bars, namely, one crown bar, two 3rd bars and two 5th bars, but it had been decided to line the opening lengths of the tunnel with granite ashlar masonry, and the setting of this was with Chinese masons, dreadfully slow, and after three lengths had been turned with stone masonry lining at either face, it was abandoned, and brick lining used throughout the remainder of the tunnel.

The break-up lengths in the damp decomposed granite took a considereble time to get out owing to the constant streams of water which descended on the men, and to the heavy timbering which had to be resorted to. In the first break-up length in from the north face a 2ft. diameter Oregon pine crown bar was used, the remaining drawing bars being 20in. in diameter, and this timber was none too strong for the weight encountered, liner bars having to be inserted and propped off formation before the length could be turned.

By March, 1907, the labour force had been augmented by several experienced Chinese miners who had returned from Australia and the Federated Malay States. These men, recruited from the surrounding country, a very useful lot of hand-drillers, and the situation, as regarded labour, continued to improve, until at the completion of the tunnels on the railway it might be said that there were as fine a force of drillers as could be found anywhere outside of Europe or America.

HEADINGS

As the heading advanced further into the hill the rock continued to improve and though hard, compact, and needing a large amount of explosive to obtain progress, it was very much more easy to deal with than the badly fissured and decomposed rock met with in the first 700ft. at either end of the tunnel. The explosive found most suitable was blasting gelatine; the amount used per foot of heading driven varied, in some parts amounting to as much as 30lb. per foot but the general average might be taken at 8lb. per foot.

In the break-up lengths, where drawing-bars were necessary, a top heading were driven at either face of the break-up and, of course, two sets of bars lost at each junction length having to be built in, but this only occurred in the junction lengths in the first 800ft. from the north end of the tunnel, the remainder of the tunnel, being in sufficiently light ground where timbering was necessary, to permit of the taking out of the bars at the junction lengths. The tunnel ribs were made of three 3in. thicknesses of Borneo hardwood, the laggings being of Oregon pine 6in. by 2in.

TRANSPORT

The transport of plant and materials was a matter of considerable difficulty as regards the north face, but at the south face a mètre gauge line, some two miles in length, connecting the main store's depôt at

KOWLOON-CANTON RAILWAY.—View showing slips and masonry of outside length, Taipo Tunnel, South Face, Oct., 1908.

KOWLOON-CANTON RAILWAY.—Another view showing slips and masonry of outside length, Taipo Tunnel, South Face, Oct., 1908.

Taikoksui with the south face, was completed before the end of 1906. Stores and material for the north face were sent round by sea in junks or lighters towed by steam launches to a store's depôt on tide cove, an inlet of Mirs' Bay, a distance of forty-five miles by sea; from this point they were transhipped into shallow draught boats and conveyed up a shallow river to a point two miles from the north face of the tunnel from which a metre gauge railway was laid to the tunnel. Delays, owing to launches being held up by bad weather on the stretch of coast between the entrance to Hongkong harbour and Mirs' Bay, were frequent, proved a considerable handicap, and were the source of expense.

KOWLOON-CANTON RAILWAY.—Taipo Tunnel, South Face.

PLANT

The air-compressing plant employed consisted of six Schram-Harker direct-acting steam-driven air-compressors (three at each face of the tunnel) cylinders 18in. diameter and 24in. stroke. The tunnel was lighted throughout by electricity and the lighting plant consisted of four sets of Siemens direct-acting, 14 kilowatt dynamos 100/133 amperes, 100/120 volts, the engines being single cylinder, manufactured by Browett, Lindley & Co. for a speed of 600 revolutions per minute. Arc lamps were employed in the approach cuttings and yards at either face of the tunnel, and the headings and tunnel generally were lighted with ordinary incandescent 16 c.p. lamps. The power plant consisted of a battery of three Lancashire boilers at each 24ft. × 6ft. diameter manufactured by Ruston, Proctor & Co., and at each face there was a steel smoke-stack 100ft. in height with an internal diameter of 5ft.

The drilling machines employed were by the same makers as the compressors with 3¼-in. cylinders, and were mounted on columns with horizontal arms, four machines generally being used on the heading driving. It was not found economical as a rule to use the machine drills on the enlargement, and the headings having been driven, the enlarging was done chiefly by hand labour.

The tunnel was completed the end of 1909.

OTHER TUNNELS ON THE KOWLOON-CANTON RAILWAY

Tunnel No. 1, 150ft. in length, was a short tunnel through a narrow neck between two hills and was constructed by two Italians working as sub-contractors for Messrs. Leigh and Orange who had contracted for a length of two and a half miles at the Kowloon end of the railway. It was in red earth or decomposed granite with a few boulders and presented no particular difficulty.

Tunnel No. 3.—329 feet in length is through a rocky spur on the coast section between Shatin and Taipo and is on a five-degree curve, the material is hard rock throughout. A top heading was first driven and this enlarged by hand drilling and blasting and taken down to the level of the springing of the arch when skew-backs were formed in the rock and a brick arching five rings thick turned, the bottom portion being drilled and blasted out afterwards. The sides of the tunnel below the arch were trimmed down and left unprotected, the rock being sufficiently sound. The damage caused to the completed brick arching by the blasting of the lower portion was comparatively slight, and was easily repaired with cement plaster wherever the surface of the brick-work was chipped broken.

Tunnel No. 4. 180ft. in length, was also on a five-degree curve through a spur on the coast section. The upper portion was in an altered decomposed granite, and drawing bars were required throughout its length, one set only being used and drawn through from one face to the other. A top heading was first driven and after two lengths at the north face had been taken out to full section and turned, it was found possible to get skew-backs in hard rock and the arching which consisted of six rings of brick-work was turned and the remainder of the tunnel finished in the same way as No. 3.

Tunnel No. 5.—Taipo Tunnel, 923 feet in length on the straight, proved a very heavy piece of work. The interior of the hill was hard solid granite, but at each face there was a bed of soft decomposed granite interspersed with veins of a soft black greasy substance, lying at an angle on the face of the rock, and at the south face this was affected by the heavy rains of the monsoon season, and gave a great deal of trouble.

The approach cuttings were begun during 1907, and at an early stage the south approach showed signs of giving trouple. The spring of 1908 was very wet, and several small slips took place in February and March; early in April the face of the cutting was shored up with heavy timber and an attempt made to get in a length, a top heading was driven 24ft. into the hill and two crown bars were propped in position, when, after two days of incessant and heavy rain, the bottom of the cutting face bulged outwards breaking the sheeting, and letting in the top: the cills, of which there were four, were of 18in. square Oregon pine timber racked back to the sides of the cutting and these were sheared through clean close to puncheons with which they were propped. The cause of this slip was a large seam of greasy black substance which had become affected by the heavy rain and caused the bottom of the cutting face to slide and bulge thus bringing in the top. More slips followed and the cutting became a regular sea of mud with masses of enormous boulders embedded in it. April and May, 1908, were very wet months, and several extremely heavy downpours took place (five and a half inches being recorded in one instance). All efforts to stop the flow of mud from the face failed as there was no holding ground for the long struts used, the weight from the face causing the ends of these to plough their way along the floor of the cutting. In March a five-ton steam derrick crane with a 50ft. jib was erected on one slope of the cutting close up to the face, and was used for removing boulders and also for handling the heavy timber in use. Towards the end of May when but little progress had been made except in clearing semi-liquid mud and boulders, the author decided to again try and box in the face of the cutting, and the following plan was adopted, which eventually proved successful: Taking advantage of a slight interval of fine weather a space was cleared in the floor of cutting as close up to the face as it was possible to get, and a solid block of rubble masonry in cement measuring 15ft. wide by 20ft. long by 15ft. high was erected; large boulders were picked up by the derrick crane and were set in place and surrounded by cement concrete, the resulting mass being a solid mass of masonry weighing over 300 tons. In order to facilitate the removal of this mass of masonry when its purpose was accomplished hollow bamboos were built in, and when after the completion of the tunnel it was desired to remove the block, charges of dynamite were inserted and fired, and the mass shaken so thoroughly that with the help of the crane no difficulty was experienced in removing it.

As soon as the block of masonry was completed a line of sheet piling was driven across the bottom of the face and along the slopes of the cutting at such a distance that there was room for a retaining wall to be built between the outside of the timber and the edge of the cutting; the lines of sheeting piles were then strongly strutted off the masonry block and the face made good before any further excavation was done in the bottom of the cutting. The mud and boulders in the bottom of the cutting were then removed, a deep grip cut at one side of the cutting and timbered to drain off the water, and an outside length of the tunnel with wing retaining walls

KOWLOON-CANTON RAILWAY.—Taipo Tunnel. View showing timbering.

built as soon as possible. The sheeting piles at the face were then bored through and cut out carefully one by one to a size sufficient to allow of timber being got in for a bottom heading, and a boxed heading close polled all round was carefully driven, this work being performed by English tunnel foremen, of whom there were at that time four employed on the tunnel; as the heading progressed into the hill large quantities of water were discharged from the surrounding ground, and by the beginning of November 1908 the drainage of the hill-side had progressed so far that it

was considered safe to make a further attempt to get out the face length, a top heading was therefore driven from the face, a board at a time being cut through and the ground beyond it made good before any more of it was exposed and a full set of drawing bars were got in, two crown bars being used; two fourth bars and two sixth bars in addition constituted the set. The top of the length was taken down to cill level, one cill only being used, and from this point downwards closely timbered trenches were taken out for the side walls; the original face, except that taken out for the bottom heading and the side-walls, being still left strutted on to the outside length and masonry block, a good deal of face weight was thus avoided. The same method was adopted for the following lengths until the ground got better and the danger of weight from the face had disappeared, the dumpling left was then removed. In the first three lengths in from the portal short lengths of 9ft. and 12ft. only were taken out and the brick lining was eight rings thick.

NORTH FACE.

At the north face rock was met with early and the timbering, generally, was not of an extensive character, though even here bands of decomposed material occurred and the rock required careful watching. A small top heading was driven through to a point over the bottom heading coming from the south, and a breakdown was then formed providing two additional working faces. When the solid rock was reached the same method was employed as in tunnels Nos. 3 and 4; the top heading was enlarged to full section down to the springing of the arch and skew-backs formed in the rock, the ribs were then set and the arching, which varied in thickness of from four to five rings of brick-work, turned. The remaining bench was then drilled, and blasted, the working face of the bench being generally some three or four lengths behind the arching. In the rock at the north face of the tunnel a piece-work contract was let to an Italian miner, but at the south face each length had to be taken on its merits and piece-work contracts or bonuses given to the tunnel gangs, according to the material met with. At this tunnel, as at the Beacon Hill Tunnel, a complete system of time-keeping was established early in the work, and the time of all piece-work men and shift gangs was carefully checked. An English time-keeper, with experience on contract work in England, was brought out early in 1906 for the Beacon Hill Tunnel, and the system once established, was extended throughout the line, Indians and Chinese being trained for the purpose.

The staff employed on the construction of the British section consisted of Mr. G. W. Eves, chief resident engineer, with executive charge of the construction work to the south of the Beacon Hill Tunnel, which charge in 1908 was handed over to Mr. R. Baker, assistant engineer, who then became district engineer for the reclamation in Kowloon Bay, and the work south of the Beacon Hill Tunnel. The author was district engineer with executive charge of the northern portion of the British section, which, in 1906 and 1907, included the Beacon Hill Tunnel, during which period all the shafts were sunk, the machinery installed, some 2,000ft. of heaving driven and a considerable amount of widening done in the heavy ground at either face of the tunnel. Messrs. F. W. Valpy and J. C. Steen, assistant engineers, on the latter of whose subdivision tunnels Nos. 3 and 4 were situated, Mr. F. Southey, assistant engineer, and Mr. E. J. Richards. At the end of 1907 the Beacon Hill Tennel was made a separate charge, Mr. W. Waite coming out from England and taking charge of the work as tunnel superintendent, under the chief resident engineer. On Mr. Waite's arrival the author proceeded to Taipo Mile 12 and the remainder of the railway to the frontier of the leased territories was constructed under his supervision, Taipo tunnel being in his direct charge. Mr. Eves was succeeded as chief engineer by the late Mr. E. S. Lindsey, who remained in charge of the railway during the first year of its being open to traffic.

GAS PRODUCER ENGINES IN A NEW FIELD

SELF-PROPELLED BARGES EQUIPPED WITH GAS PRODUCERS AND GAS ENGINES

A fleet of large self-propelled barges, fifteen in number, to ply between New Orleans and the Coal Fields of Northern Alabama is of peculiar interest in that they are the first craft of their kind in America to be propelled by Producer Gas Engines. They are also the first craft to bring coal from the Alabama fields to New Orleans wharves by water.

The first barge of a fleet of fifteen being built by the Alabama & New Orleans Transportation Company for transporting coal from Northern Alabama Coal Regions to New Orleans.

Alabama coal has heretofore been shipped to New Orleans by rail. A glance at a map of the Gulf States shows these barges follow almost as direct a route. Starting from the coal fields they will proceed down the Black Warrior, Warrior and Tombigbe Rivers, across Mobile Bay and proceed to New Orleans by way of Mississippi Sound, Lake Borgne, Lake Borgne Canal and the Mississippi River, a total distance of a little over 500 miles.

The barges are of steel construction, and are similar in design to those in use on the canals of Holland. Their measurements are as follows: Length, 240 ft., Width on deck, 32 ft., Width at bottom, 28 ft., Depth, sides, 8 ft., Depth, center, 8⅛ ft. Their capacity is 1,000 tons. Draft, when fully loaded, 7 ft. They are propelled by twin screws driven by twin engines and have a speed of approximately 7 miles an hour when fully loaded. The weight of each barge and equipment is close to 240 tons.

The screws are driven at 300 R. P. M. by two 75 H. P. Vertical Producer Gas Engines. Gas for the engine is furnished by a 150 H. P. Producer. The fuel used for the Producer is what has heretofore been a waste coke from the ovens of the Birmingham District and which consequently is secured at a very low price. This coke is practically pea size. It has a calorific value of about 11,000 B. T. U. and the consumption is approximately 1 lb. per horse power hour. Bunkers are provided to hold about 15 tons of fuel. Each producer is equipped with scrubber gas tank, tar extractor and is fitted with water bottom.

While the main power plant is of primal interest the auxiliary power equipment of the barge also merits mention. This consists of a 9 H. P. Gasoline Engine, which drives a centrifugal pump handling the ballast and bilge water, a blower, an air compressor and a 5½ K. W. direct current generator. Current is used for electric lights throughout the boat, fans in cabins and engine room, a 3,200 candle-power search light and 5 H. P. Motor. The arc light is mounted on the roof of pilot house and galley, which are immediately over the engine room. The motor is for operating an anchor winch. The generator is so mounted that when the large engines are running it may be belt driven from one of them. A second 4" Centrifugal Pump is also installed to be driven by one of the large engines through friction wheel contact.

A decided advantage of the self-propelled barge for use in these waters is that they can negotiate the numerous locks on the Warriors and Tombigbe Rivers in much less time than if towed. Each lock can be passed in 20 minutes by these vessels, whereas more than an hour would be consumed by the towed fleet system.

The barges will make the trip from the Mine region to New Orleans in 72 hours and with all 15 vessels in service it is estimated that coal will be moved into New Orleans at the rate of 50,000 tons a month. Added revenue will be derived by the barges carrying freight on the return trip to the coal field.

The Alabama and New Orleans Transportation Company, of which John H. Bernhard is Vice-President and General Manager, control the Lake Borgne Canal which is the key to the route traversed by these barges, and it is to them that the new departure in Alabama coal transportation is due. All the barges are being built at the company's own ship yard, located at a point about 12 miles below New Orleans, where the canal empties into the Mississippi. The first barge was launched June 4th last. Others have now been launched—it being the company's plan to construct one a month until the fleet numbers fifteen vessels. All the power equipment for the barges—engines, gas producers, motors, generators, pumps, air compressors, etc., was designed and furnished by Fairbanks, Morse & Co.

Loading Naval Stores.

FAR EASTERN RAILWAYS

CHINA

Fukien Railway.—The Ministry of Communications has sent deputies to Fukien to take over the property of the Fukien Railway Company. The construction of this line was begun in the 31st year of the reign of the late Emperor, but less than twenty miles of line has been completed at a cost of two million dollars. The Company requested the Government to nationalise the line.

Chefoo-Weihsien Line.—It is reported that the Chinese Government has, definitely decided to take in hand the building of the Chefoo-Weihsien railway and all who regard this as a vital necessity to the port of Chefoo are anxious that both railway and breakwater should be undertaken at one and the same time. They are the two natural parts of one scheme and with these two developments the future of Chefoo is assured.

The Chekiang Railway.—A correspondent writes from Hangchow on March 1:—To-day a meeting of the shareholders in the Chekiang Railway was held to discuss the question of handing over the railway to the Government, as has been done in the case of the Kiangsu portion. Nothing definite was settled at the meeting beyond the appointment of two deputies who are to go to Peking where they will discuss terms and conditions with the Minister of Communications.

The Lung-Tsing-U-Hai Line.—A correspondent writes from Chengchow, Honan:—The land about here, outside the city and between it and the railway is all being bought up by investors. We gave 30,000 cash a mow for what we bought six years ago, but now the same land is selling for 250,000 cash. Native buildings are going up by the acre. The Pien-lo railway has bought a big tract of land and is now building dwelling houses on it for foreign employees. They tell me one hundred new men, French and Belgians, are expected within a month's time.

Pukow-Sinyangchow Railway.—A flying survey with levels was carried through in the autumn of last year from Wu I to Sinyangchou, with a foreign staff of only two engineers assisted by Chinese surveyors. The final location and survey have now been completed by Mr. C. E. Stewart up to 76 miles from Wu I, and the marking out of the land required is now in progress at the East end, and land purchase will commence at once. Mr. Louis Broome, District Engineer at Sinyangchow takes charge of that end of the line and goes out at once to commence the final survey and location at the West end, where it is hoped very soon to commence buying land for the junction with the Ching—Han Railway, and East thereof. Mr. Ferguson, formerly of the Tientsin-Pukow Railway, has joined Mr. Bourne's staff as District Engineer with residence at Luchowfu, and will go out as soon as conditions permit. A few other Engineers are now arriving from various parts of the world and all the preliminary work will soon be well in hand. Wu I is unfortunate in possessing very little accommodation of any sort; but temporary quarters have been found for the present and until the decision as to the details of junction with the Tientsin-Pukow Railway enable the terminal land to be bought and proper quarters erected.

Railway Work in Honan.—A Kaifeng correspondent writes:—Work on the railway connecting Kaifeng with the Tientsin-Pukow railway is proceeding apace, and we hear that the line between here and Hsuchow is to be completed in about a year. The line is following somewhat the south bank of the old Yellow River. For cost of construction and purchase of land this may be economical, but it means that for nearly two hundred miles it is carried through a sparsely populated and rather barren country, while to have taken a more southern course along the main trade route with Kiangsu would have tapped several large cities and an agricultural and fruit growing country than which there is no better.

Canton-Hankow Railway.—It is expected that shortly embankment work will be in full swing on the three sections of the Hankow-Canton railway between Wuchang and Changsha. The opposition met with from landowners who were unwilling to sell their land at a fair price to the railway has somewhat decreased of late in the vicinity of Wuchang, and a five-mile length of embankment is under construction, while tenders are being received for further lengths.

The construction of the railway between Wuchang and Changsha is being carried out in three sections, Wuchang to Sinti, Sinti to Yochow and Yochow to Changsha. The line is already under construction at Yochow and will meet the Wuchang section about midway. The chief difficulty being experienced is through the disappearance of the pegs which are placed every hundred feet along the route of the railway, these pegs being taken out by the country folk in the hope of getting the railway diverted.

The survey of the Changsha section has been completed, and the purchase of the land is to start shortly, after which work will be commenced. The construction work in Hunan is not to be pushed on just yet. Ten new foreign assistant engineers have been engaged, six of whom have arrived, the others being expected shortly. The new engineers are to supervise the construction work on the spot.

It was at first estimated that through service to Canton would be completed in a matter of three years, but engineers, after surveying the conditions of the country at the Kwangtung border increase the time to about five years, a good deal of tunnelling and cutting having to be done. Notwithstanding that Hunan is a great cereal province and is rich in minerals, it is not expected that returns sufficient to meet even the interest on the loans will be obtained from the railway till the whole length is complete and through service started.

The staff of the railway, who have offices at present in Hankow, may possibly move over to Wuchang after the coming summer, for the building of the railway premises outside the Tung Hsiang gate is under way. When these are completed the railway will be able to save something like $1,000 per month on rent.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended January 24 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1914....	64,893	9,710	74,603
1913....	50,314	10,509	60,823
Increase.	14,579	—	13,780
Decrease	—	799	—

For thirty weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1914....	1,418,126	294,860	1,712,986
1913....	1,206,230	279,080	1,485,310
Increase.	211,887	15,780	227,607
Decrease	—	—	—

Week ended January 31.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1914....	38,629	4,414	43,043
1913....	55,914	7,830	63,744
Increase	—	—	—
Decrease	17,285	3,416	20,701

For thirty-one weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1914....	1,456,755	299,274	1,756,029
1913....	1,262,153	286,910	1,549,063
Increase.	194,602	12,364	206,966
Decrease	—	—	—

*** Only three trains were run on the 26th—Chinese New Year day.

Week ended February 7.

Year.	Passengers.	Goods and Sundries	Total for the week.
	$	$	$
1914....	52,807	9,327	62,134
1913....	41,072	3,163	44,235
Increase.	11,735	6,164	17,899
Decrease	—	—	—

For thirty-two weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	$	$	$
1914....	1,509,562	308,601	1,818,163
1913....	1,303,225	290,073	1,593,298
Increase.	206,337	18,528	224,865
Decrease	—	—	—

Week ended February 14.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	$	$	$
1914....	53,149	10,956	64,105
1913....	46,732	6,514	53,246
Increase.	6,417	4,442	10,859
Decrease	—	—	—

For thirty-three weeks.

Year.	Passengers.	Goods and Sundries	Total
	$	$	$
1914....	1,562,711	319,557	1,882,268
1913....	1,349,957	296,587	1,646,544
Increase.	212,754	22,970	235,724
Decrease	—	—	—

Week ended February 21.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	41,641	9,129	50,770
1913....	48,656	9,974	58,630
Increase.	—	—	—
Decrease.	7,015	845	7,860

For thirty-four weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	1,604,352	328,686	1,933,038
1913....	1,398,613	306,561	1,705,174
Increase	205,739	22,125	227,864
Decrease	—	—	—

Week ended February 28.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	50,339	12,716	63,055
1913....	55,235	11,703	66,938
Increase.	—	1,013	—
Decrease	4,896	—	3,883

For thirty-five weeks.

Year.	Passengers.	Goods & Sundries.	Total
	$	$	$
1914....	1,654,691	341,402	1,996,093
1913....	1,453,848	318,264	1,772,112
Increase.	200,843	23,138	223,981
Decrease	—	—	—

Week ended March 7.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	53,130	11,570	64,700
1413....	49,627	10,614	60,241
Increase.	3,503	956	4,459
Decrease	—	—	—

For thirty-six weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	1,707,821	352,972	2,060,793
1913....	1,503,475	328,878	1,832,353
Increase.	204,346	24,094	228,440
Decrease	—	—	—

JAPAN

Japanese State Lines.—Expenditure for the coming fiscal year on Imperial Government Railways is estimated at over 8,920,000 *yen*. The principal works are as follows:—

	yen
Changes of the trunk line of Tokaido and increase of lines	450,000
Double-track for Yokosuka	300,000
Construction of lines between Uyeno and Central Station in the city (over)	970,000
Double-track for Kyushu line	700,000
Double-track and improvement for Hokkaido Railway	856,110
Construction of cars .. .. (over)	6,020,000

Long Tunnel Finished.—An Osaka report says that the Ikomayama tunnel on the Osaka Electric Railway has been completed. The length is 11,088 *shaku* and work was commenced in July, 1911 by the Ohayashi-gumi, contractors of Osaka, at a cost of 2,500,000 yen. Thirty-four men lost their lives in the work.

New Tokyo Central Station.—A Tokyo paper reports that the interior decoration of the Central Railway Station, the entire outward form of which was completed a few weeks ago, is now being pushed on under the supervision of Dr. Tatsuno. The decorative work inside will combine many features representing the highest art of the leading artists of Japan.

Entering the front main entrance, one finds himself in a spacious hall of 30 *tsubo* paved with gray marble and with no ceiling except the lofty roof. The ceiling has at its four corner stained glass-windows representing the deified forms of a dragon, a tiger, a bird, and a tortoise. The walls will be decorated with mural paintings based on ancient Japanese myths. This work will shortly be begun under the direction of Mr. Kiyoteru Kuroda and Mr. Eisaku Wada. The waiting rooms for passengers take parts of the central hall.

There is a waiting room of 30 *tsubo* at either side of the central hall, connected by a corridor. These side halls will be placed at the disposal of the Imperial suite when the Emperor passes through the station. The floors of those rooms are mosaic work in wood. The walls of the right side room are covered with silk cloth with designs of bamboo plants, while silk wall cloth of designs of plum flowers has been chosen for the walls of the other side room. The ceilings of these rooms are worked in a checker-board design with *hinoki*.

The Imperial room is connected to the left side room by a corridor with marble floor. The room is designed in the shape of an irregular hexagon. The mosaic floor is also the choice for this hall. Elaborate designs of phœnix and of chrysanthemum flowers are inlaid in the clopboards of *hinoki*. The walls are covered with silk cloth with patterns of pine foliage. The ceiling is finished in highly wrought *hinoki*.

A large cloisonné work representing a sunrise is hung on the wall above the mantelpiece. The design was drawn by Mr. Sobun of Kyoto, and made by the Ando factory of the same city, devoting half a year to the work. The chairs, tables, and other articles of furniture will be decorated in novel designs combining Japanese taste and ideal of the Secessionists School. The curtains, alvaperies and portieres will be all stamped with the highest and best of Japanese workmanship.

Traffic Returns.—The cargo handled by the different lines of the Japanese State Railways during January last comes to a total tonnage of 2,503,210 tons, details being as given below:—

	Tonnage of Cargo handled during Jan. 1914. Tons.	Comparison with Jan. 1913. Tons.
Lines in Honshu....	1,515,451	+ 987,759
Lines in Kyushu....	987,759	+ 25,675

Receipts for the same time are as follows:—

	Receipts Jan. 1914. Yen.	Comparison with Jan. 1913. Yen.
Lines in Honshu....	2,887,607	+ 82,534
Lines in Kyushu....	856,848	+ 46,010

This year, as a matter of fact, an appreciation by more than 100,000 tons has been witnessed in cargo handled by different railway lines, but compared with the same time last year the rate of progress shows a decrease. Furthermore a comparison with the record for December last will show the falling-off amounts to more than 28,000 tons.

Of the principal goods handled by the different railway lines rice and coal witnessed a heavy appreciation, while cotton textiles, knitted goods, and charcoal, which see more or less increase at this time of year practically remained stationary.
Companies

Railway Extension in Japan.—The railway lines included in the set program will be wellnigh completed during the fiscal year 1914-15. Therefore the Railway Board is now planning a scheme for the next fiscal year. As a result of the administrative readjustment, however, the construction expenses for the year have been much reduced. That will, it is anticipated, induce the Board to limit the lines to be undertaken during the year to the following lines:—

Sections.	Mileage.
Otoi, Otofu-Wakanai (Hokkaido)....	87
Runnoye-Mashige (Hokkaido)	9
Nobechi-Ominato (Aomori).....	38
Omagari-Morioka (Akita and Iwate)	47
Yamagata-Sagawa *via* Sagayo and Yachi (Yamagata)	19
Kamabe-Kodzukuri (Aomori)	17
Katsuta-Omiya (Ibaraki).....	13
Yamada-Kochi-Susaki (Kochi)	13
Tottori-Chidzu (Tottori)	20
Yakago-Neame (Tottori)	19

The proposed lines will come to a total mileage of 304 miles, and surveying will be started in the course of the present year.

Kyushu Lines.—The railway east of Miyakonjo on the Miyazaki line, Kyushu, extending some two miles, has been completed and was to be opened to traffic on February 11. A station has been established at Kabayama, Mitsumata-mura.

Atami Railway.—The Government has abandoned the project of constructing a railway line at Atami, which was included in the Budget for 1914.

MANCHURIA

South Manchuria Railway.—The total traffic receipts of the S. M. R. Co., for the month of January amounted to Y2,143,433, being a decrease by Y564,571 from the corresponding month of last year. It must be borne in mind that the Chinese New Year holidays, preceded by the year end holidays, which extend over at least eight days, occurred in February last year whilst they happened to run this year from the 23rd to the 30th of January. This intervention of the Chinese holidays accounts for the decrease.

There has been a marked increase in the aggregate traffic receipts of the Railway since the beginning of the current fiscal year in April over those for the corresponding period of the preceding fiscal year. Up to last January the Railway received Y18,273,212, as against Y15,486,497 for the corresponding ten months of the preceding fiscal year.

During last February the S. M. Railway received as the traffic earnings the total of Y. 2,083,550, being an increase by Y. 300,161 on the corresponding month of last year. The aggregate receipts since last April reached Y. 20,197,678, being an increase by Y. 2,857,738 on the corresponding period of last year.

Light Rail Line to Fuchou.—The surveys of the proposed light rail line to Fuchou have been finished by experts of the South Manchuria Railway Company. The terminus at the Fuchou end is Wuhutzui, but opinions were divided as to which should be other terminus on the S. M. Railway—Wafangtien or Pulantien. The choice was settled in favour of the latter. It was thought more convenient to have the major part of the line pass through the Leased Territory and only a small portion run through the neutral zone.

SIAM

Prai-Bangkok Connection.—The following is an extract from a speech by the King of Siam on the occasion of his birthday on the 2nd inst. It specifically and authoritatively announces the intention of the Siamese Government to construct the branch which will connect the Kedah-Perlis extension of the F.M.S. Railway with the Southern Siamese east coast main line by a link running from the Kedah boundary through Siamese territory to Octapa the Singora junction:—

"The construction of the Southern Railway Line is being continually proceeded with. On the 1st January of the present year three sections will be open to traffic namely: from Hua Hin to Vang Phong in the province of Pranburi, from Singora to the junction at Uh Taphao, and from Trang to Thung Song in the province of Nagara Sridhamaraj. It has been decided to construct a line branching from Uh Taphao to join with the British railway line on the frontier of Kedah, and this when completed, will enable the exchange of mails between our country and Europe to be accelerated by several days."

MALAYA

The Kedah Railway.—Two Federated Malay States surveyors are now examining the route for the continuation of the Kedah Railway extension into Perlis territory and thence to the Siamese boundary to meet the Siamese Southern Railway. It is proposed to make the extension from Ootapao, the junction for Siggora.

Trans-Peninsula Line.—The *Pinang Gazette* understands that the Federated Malay States Government at present have under their consideration an important scheme for extending the F. M. S. Railway system by a trans-Peninsula line in addition to the Ootapa-Perlis link. The proposals now being considered are for a line which will start at a point in Kelantan, south of Kota Bahru, and will strike due west, through Upper Perak, connecting with the Prai-Taiping line.

It is, of course, well known that both in Upper Perak and in Kelantan there are big areas of rich mining and agricultural lands the development of which is held back through lack of proper communications. A railway line, such as is projected, would open up a most promising district of the Peninsula: it is said that the idea has been favourably received in influential quarters and it is likely to be brought up at an early meeting of the Federal Council.

GENERAL

Irkutsk-Bodaibe Line.—The Governor-General of Irkutsk has forwarded to the Ministry of Finance his views on the question of the construction of Irkutsk-Bodaibe Railway. In the capacity of an applicant for the concession to construct this line of more than a thousand versts appears the Lena Gold Mining Company. In his report the Governor-General points out that with regard to the spacious basin of the Lena, the immediate problem of the State must be consolidation of the gold-mining industry to which end it is indispensable to provide the region with proper means of communication. From this standpoint, however, all projects which look only to the connection of the Siberian Railway with the wharves of the Lena River can not be regarded as satisfying the fundamental needs of the region. Thus, the sole adequate solution of the question is the connection of the Lena basin with the Siberian trunkline by an unbroken railway route. At the same time the Governor categorically declares himself against conferring extraordinary privileges upon private entrepreneurs, more especially the right to impose an increased tariff under which the entire Lena region would be surrendered to the economic exploitation of such speculators.

British North Borneo Railway.—In the course of his address at the 62nd half yearly meeting of the British North Borneo Co., the Chairman, Sir West Ridgeway, said:—

The reconstruction of the railway looms large in our programme. Under the able supervision and control of our general manager, Mr. Watson, satisfactory progress is being made day by day, and we are approaching the time when the shipment of rolling stock, bridge material, &c., &c., will cease. As you are aware, it is our intention to substitute for the old 30-lb. rails of double that weight; and in this connection we have shipped 30 miles of the heavier rail, and shall ship a further 27, making 57 miles in all. That will provide the heavier rail for the section between Jesselton and Beaufort. The substitution of 60-lb. rails on the remaining distance from Beaufort up to Melalap—a matter, in round figures, of 60 miles—will have to be undertaken later on; nothing definite has yet been settled. The cost of what is practically the entire reconstruction of our railway will be considerable. We have already expended some £112,000, and a further considerable sum will have to be spent before the railway has been entirely transformed from a pioneer into a permanent railway. As an instance of what we may expect as the result of this reconstruction, I am pleased to be able to tell you that during the first half of the current year the receipts have been at the rate of £23,000 per annum, which is more than £2,000 better than during the preceding year. Moreover, from cabled reports of receipts since the end of June last, we feel confident that the revenue derived from that source during 1913 will exceed the revenue of 1912 by at least £3,000.

The Amur Railway.—The Blagovestchensk Labor Bureau reports that 20,573 workmen were brought out from European Russia under contract in 1912 to work on the central section of the Amur Railroad. Their wages amounted to $2,181,025. In addition to these men, about 2,560 laborers not under contract were employed during the second part of the season. The total expenditure for labor on the central section of the railroad in 1912 was $2,589,000.

By the time the Amur Railroad is completed in 1916, it is expected that the large coal deposits which exist along the line will be developed sufficiently to furnish the road's fuel supply. The chief deposits are near Malinovka, 8 miles from the railway, between the Tukan and Kivda Rivers. An area of about 1 square mile has been examined, and the indications are that the deposits are regular and cover a large territory. The coal bed averages 7 feet in thickness and lies under 35 to 42 feet of gray clay. The outcrops are on an elevation and not subject to washouts. Working conditions are favorable, and according to the preliminary estimates the coal can be mined at a cost of $1.25 to $1.40 per ton. Coal has also been found on other sections of the railway.

New Railway Freight Tax at Harbin.—The administration of the Chinese Eastern Railway introduced in October last a so-called pood tax on all freight matter received at, or shipped from Harbin. This tax, which is to be collected on each pood (36.1128 pounds) of freight handled by the railway at Harbin, is to remain in force for a period of 10 years, and it is estimated that during this time the revenue will amount to approximately $625,000. This money will be expended chiefly for improving the streets in Harbin, although a certain portion will be used for other municipal improvement.

COMPANIES

China Provident Loan and Mortgage Co., Ltd.—The report of this Company states that the gross earnings for the past year amount to $136,111.77 and after deducting interest paid and all expenses, remuneration to General Managers, consulting committee's and auditors' fees, and adding forfeited dividends, $2,535.20, and the balance of $2,774.55 brought forward from last year's account, there remains a sum of $98,332.76, which it was recommended be appropriated as follows, viz:—

To place to reserve fund	$ 5,000.00
To pay a dividend of 7 per cent. or 70 cents per share	87,500.00
To carry forward of the credit of next year's account	5,832.76

Kowloon Land and Building Co., Ltd.—The twenty-fifth report of the Board of Directors states that the balance of profit and loss account for the year including $806.45 balance brought forward from last account, after writing off all charges and expenses, amounts to $19,172.69. The Directors recommended that a dividend of $2.80 per share be paid, which, after providing for directors' and auditor's fees, would leave a balance of $1,822.69 to be carried forward to the credit of a new profit and loss account.

Taku Tug and Lighter Co., Ltd.—The report of the directors for the year ended December 31, 1913, stated that the result of the year's working showed a balance at general working account of $217,948.09. This enabled the directors to pay to the shareholders two interim dividends of 2 per cent. each in August and November last, and after providing for general expenses, etc., there was a balance of $150,514.38. This available balance the directors recommended should be disposed of as follows, viz.:

By payment of directors' and auditors' fees	$ 5,000.00
By payment to depreciation sinking fund	60,047.81
By payment of a final dividend of 4 per cent	73,714.28
By payment to equalization of dividends account..	10,000.00
By carrying forward to 1914	1,752.29
	$150,514.38

Hongkong and Kowloon Wharf and Godown Co., Limited.—The report for the year ended 31st December, 1913, stated that the profit on working was $503,523.06, as compared with $386,011.94 in 1912.

The balance at credit of profit and loss account, including $21,699.74 brought forward from last year, and after deducting directors, and auditors' fees, and paying for all interest and repairs, amounted to $440,402.80, which it was proposed to appropriate as follows:—

To pay a dividend of 7 per cent. from working profits	$210,000.00
To write off Launches	4,757.57
" " Lighters	36,297.88
" " Machinery	18,538.76
" " Kowloon Wharves ..	36,102.06
" " West Point Wharf ..	454.61
" " Railways and Rolling Stock	9,361.44
To Transfer to Reserve Fund.. ..	100,000.00
To carry forward to new account ..	24,890.48
	$440,402.80

Shanghai Horse Bazaar Co., Ltd.—The report of the directors for the year ended December 31, 1913, stated that the balance at credit of profit and loss account was Tls. 27,306.89, which the directors recommended the shareholders to deal with as follows:—

	Tls.
A Dividend of 8 per cent.	21,600.00
Carry forward to a new profit and loss account	5,706.89
	Tls. 27,306.89

Central Stores, Ltd.—The report of the directors for the year ended December, 31, 1913, stated that the net profit for the period amounted to $101,873.77, which less directors', auditors' and trustees' fees $2,684.92, interest on debentures $27,397.20, interest on over draft, etc., $432.67, reduction of capital expenses $1,489.86 and reserve for doubtful debts $5,000 amounted to $64,869.12.

This sum the directors propose to appropriate as follows:—To pay a dividend of 10 per cent. on 34,950 ordinary shares, which will absorb $26,218.50; manager's bonus, (5 per cent. on amount of dividend $1,310.90; to place to reserve of the following accounts:—building account $10,000.00, furniture account $3,000.00, and general reserve $15,000.00; and carry forward $9,339.72.

THE SOUTH MANCHURIA RAILWAY CO.

WORKSHOPS AT SHAHOKOU

At Shahokou near Dairen the South Manchuria Railway Company has railway workshops, which for completeness of equipment can compare with anything of the kind elsewhere. The company was determined that the question of expense should not prevent the establishment of shops that could not only cope with all the requirements of their own railway, but be capable of undertaking work from outside. With their equipment the workshops entailed an outlay of $2,946,000 U. S. currency. The building material and machinery were purchased from Great Britain and these purchases amounted to nearly $2,000,000 U. S. currency. But as most of the rolling stock of the railway was purchased in America, much of the tool equipment is of American manufacture. The work of construction and equipment was completed in November, 1911. From a report on these workshops by Mr. Albert W. Pontius, American Consul at Dairen we take the following facts:—

GENERAL ARRANGEMENT OF PLANT

The area of the workshops and residential colony is about 400 acres. In the residential section of 200 acres are 695 houses for the staff and laborers, 12 houses for tradesfolk, a hospital, a primary school, a post and telegraph office, 3 small public baths, and a club house. All the houses are lighted by electricity, and the better class homes have hot-water heating systems. The colony is equipped with water supply and drainage systems. According to the latest census it has a population of 2,600 Japanese and 996 Chinese.

The ground space covered by the shop buildings amounts to nearly 11 acres. They are a sufficient distance apart to have good natural lighting and are so grouped as to minimize the distance over which materials and parts must be carried. The shops can repair at the same time 27 locomotives, 36 passenger, and 130 freight cars. The plant includes the following: Locomotive and machine shop; boiler shop; blacksmith shop; foundry; pattern shop and foundry stores; power house; general stores; truck, wheel, and brake shop; wood mill and freight car shop; cabinet, upholstering, and passenger car shop; paint shop; timber storeroom; timber-drying kiln; train lighting equipment shop; testing laboratories; fire station; pumping station; 70-foot turntable; 75-foot traverser; and general office building.

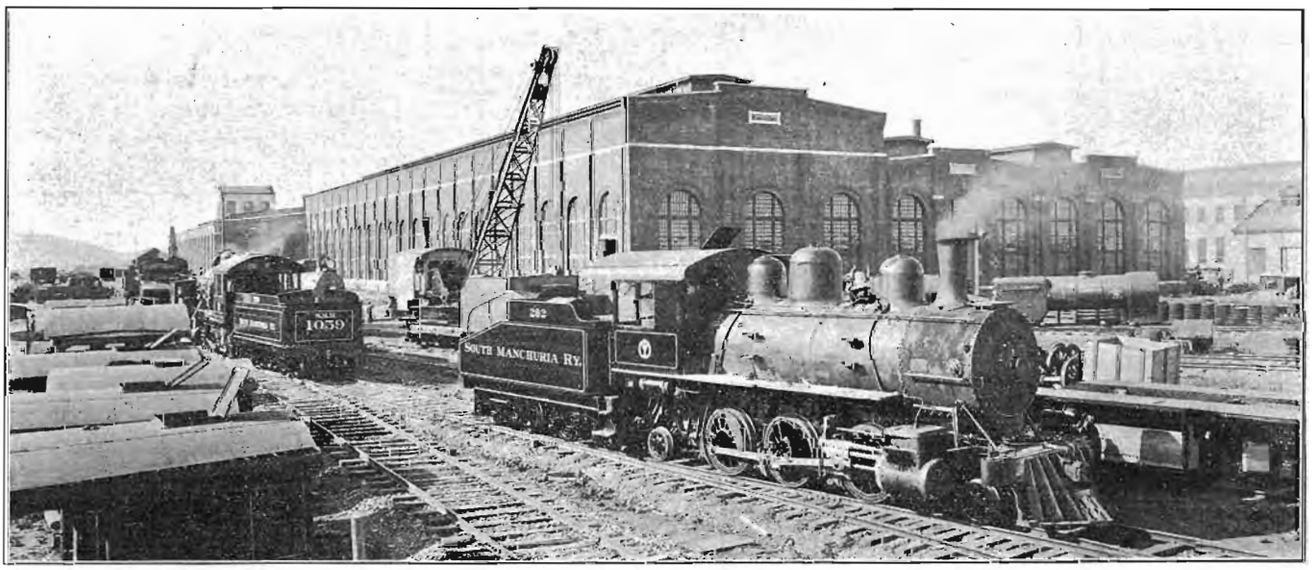
CONSTRUCTION—POWER HOUSE

Most of the buildings are fitted with patent roller shutter metal doors, and in some cases with additional sliding fireproof doors. The locomotive and machine shop, the boiler shop, and the blacksmith shop are steel skeleton structures, with steel roof trusses, inclosed in independent brick walls. The roofs of the locomotive and machine shop and the blacksmith shop are covered with grooved and tongued Oregon pine boards and laid with four thicknesses of tarred felt, cemented with pitch, and nailed down to the roof boards. Finally a coating of pitch was spread over the felt and covered with gravel. Both these buildings are provided with skylights.

The power house is equipped with three batteries of water-tube boilers. The chimney for the boiler plant is built of steel plates and stands upon a brickwork base. It has a height of 157 feet and a diameter of 9 feet at the top and 16 feet at the base. Coal is received by a hopper and passes then through a valve into the automatic filler, which fills the buckets of the endless chain-bucket conveyor for dumping into any of the six overhead coal bunkers. The coal conveyor is capable of handling about 20 tons per hour. The greatest diameter of the outgoing steam main is 9 inches and that of the incoming return main for water condensation is 4 inches.

HEATING, LIGHTING, AND FIRE PROTECTION SYSTEMS

The "Stanlock" heating system is in use. The steam consumption is estimated at 43,800 pounds per hour and the power for driving the motor fans at 38 kilowatts. A feature of the heating service is the draining of the steam risers by means of special U-shaped water loops, connecting the bottom of each riser with the return pipe. There are 46 radiators, with a radiating surface of 2,645 square feet.



Exterior View of the South Manchuria Railway Company's Workshops at Shahokou.

The lighting of the workshops and the yard is accomplished by 60 flame arc lamps of 1,200 candlepower each, 601 tungsten lamps of 100 candlepower each, and 39 tungsten lamps of 25 candlepower each. These lamps are lighted by 25-cycle 100-volt alternating current transformed from the 2,100 volt main, transmitted by the central power house at Dairen.

For fire protection the dry pipe system of the Grinel patent automatic water sprinklers has been installed in the five buildings in which combustible materials or articles are handled or stored. A total of 2,266 sprinkler heads has been installed, the installations being controlled by alternate wet and dry valves. Automatic alarm gongs operate instantaneously with the fusing of the sprinkler heads. There are two sources of water supply. One "Underwriter" steam pump is capable of pumping water at the rate of 1,000 gallons per minute into a cast-iron tank holding 7,500 gallons. This tank is at the top of a steel structure 80 feet above the ground. The fire brigade station is equipped with a light steam fire engine, a hose cart, and six 100-foot lengths of hose.

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RAILWAY MANAGEMENT IN CHINA

Divergent opinions concerning the management of the Shanghai-Nanking railway have recently been expressed in the daily press, the difference of opinion being due to an attempt to measure the results of the management of the line from certain statistics obtained from different sources. On the one hand it was maintained that the figures representing the annual deficits of that road were a sure sign that the road had been badly managed, and on the other hand it was argued that the gradual reduction of such losses by the annual increase of gross earnings was a proof equally conclusive that the road had been well managed. While admitting that both sides have some reasons to support their point of view, it is well to mention that in the matter of such a complex enterprise as a railway it is often misleading to judge the management of a line simply by the increase of gross earnings or by the financial deficits during a short period. In the first place, traffic on any reasonably placed railway, the world over, almost always increases from year to year, and hence railway earnings must also increase accordingly. In a country like China, however, where people are accustomed to other ways of transportation, it is but natural that railway traffic is less in the first two or three years than during later periods. The habits of the people, the prosperity of the country, and many other factors, which are beyond the control of the railway management, all combine to affect the traffic and the amount of the receipts of any railway in the country.

Hence it is easy to see that the earnings of a line may gradually or even suddenly increase in spite of an ordinary or even poor management. This is especially true when a short period is considered. Therefore, the figures relating to the steady increase of earnings, while in a way indicating the growing prosperity of the line, do not necessarily prove the efficiency of the management.

On the other hand, neither do the annual deficits of the line prove that the road is badly managed, for there are equally as many factors outside of the control of the management which may lead to such deficits. There is the difference in the location of the line which affects constantly both earnings and expenses, there is the difference in capital cost which in turn calls for differences in annual interest charges, there is the length of the line which affects the economy of operation, and there are a hundred and one other factors which determine the profit or loss of a road. History has shown that two lines, while being equally well managed, may often produce entirely different results. Indeed, if a line is favorably located, it may enjoy seeing traffic flow to it in abundance, so to speak, without any special effort on the part of the railway, in which case money can be made by a "sleeping" management; while on the other hand if a line is badly located and confronted with keen competition, it may find it difficult to make both ends meet in spite of a first-class management. Therefore, it is well to emphasize that to measure the success or failure of the managements of the different lines by simply comparing their receipts or the amounts of profits and losses which appear in their ledgers, often would be doing injustice to the managements. This is especially true, when the figures are not obtained by a uniform method and hence may represent entirely different things.

These facts lead us to say that in comparing the efficiency of the managements of the different railways in China, we must have uniform and more accurate and detailed statistics than what are available, and we must also take the local conditions and the facts of a fairly long period into consideration, before we can hope to do any justice to the railways in our comparison. Under the existing circumstances, where the systems of accounts and statistics of the different railways are all different, and where the system of each line itself is often changed from year to year, all comparisons and criticisms are liable to do more mischief than good. In this connection it is satisfactory to notice that the Ministry of Communications has established a special Commission for the unification of the different systems of railway accounts and statistics,* and has wisely placed this Commission under the supervision of Mr. Yih Kung-chao, the Director-General

*See FAR EASTERN REVIEW, April, 1913.

of Railways, and under the immediate charge of so earnest, progressive, and capable a man as Dr. C. C. Wang, Assistant Director of the Peking-Hankow railway. What is gratifying, too, is the selection as adviser of so able, learned, and experienced an economist and statistician as Dr. H. C. Adams. By looking over the names of the members of the Commission, we notice among them officials interested in accounting and financial matters of the Ministry of Communications and also the chief foreign accountants of all the important railways in China. This immediately leads us to look for good results, for it is only by careful examination and open deliberation as well as all round co-operation, that such an important and difficult problem as the unification of the different established systems may be brought about; and it is only by entrusting the matter in the hands of experts that good results may be obtained. And so far as we know this is the first time in China's railway history that native and foreign experts have been called together to consider and devise rules for solving an important problem in a systematic manner. It is certainly a good example which may help in solving numerous other technical questions.

In spite of the great difficulties which appeared insurmountable at the beginning, we understand that the Commission has just finished its fifth session and has held some fifty meetings. A uniform system of accounts for the use of the lines under construction will soon be presented to the Ministry for enforcement, while the whole programme of the Commission will probably be finished before winter, thus doing work in one year which took other countries at least three years. We look forward with great expectations and hope this quiet but important and lasting piece of constructive work will be allowed to be completed, and that an equally efficient organization and proper men will be found to take care of its enforcement, so that before very long the world may have some up-to-date statistics and other necessary information upon which to judge the railways of China. At present China suffers internally by being unable herself to determine accurately how her railways are doing, and externally her credit is not what it might be owing to the inability of foreign experts to arrive at a correct estimate from the varied methods of accounting in vogue. China stands to reap valuable benefits from a proper application of the recommendations of this commission.

GOVERNOR-GENERAL HARRISON SPEAKS OUT

A "straight talk" by the Governor-General of the Philippines to the business community at Manila, has considerably cleared the air and promoted a distinctly better feeling in business circles. The occasion was an informal "smoker" at Malacanan palace at which practically the whole of the business community was represented. After assuring his hearers that he was with them in anything and everything Mr. Harrison went on to say:—

"I am an American and there is nothing in the world that I am so proud of as this fact. Every drop of blood in me is American, and gentlemen, I want to assure you that in everything that may happen I am one of you.

"I do not intend to make a political speech tonight and furthermore the political status of the Philippine islands cannot be settled here. The congress of the United States is the supreme authority to settle this question and I sincerely hope with you that the status and the limitations of the Philippine question, which is a world-wide question, will soon be definitely settled. The former administration has failed to do so and then, as to-day, you businessmen suffered from the same uncertainty as you do now. The executive has no power to alter this condition. He can only advise you to be hopeful and cheerful as to the future.

"Conditions in the islands are excellent, agriculture is in a state of prosperity such as it has never enjoyed before, and agriculture is the basis of all prosperity.

"There is another point about the business depression. It is not confined to the Philippine islands alone, it is world-wide. I urge you to look beyond the limits of the Philippines, to find the reasons for the present tightness in the money market. The United States is just recovering from a financial stringency. Germany had a year of bad business, followed by France's slump in commercial prosperity. A foreign minister about a year ago told me that within a few months from the time I spoke to him $500,000,000 worth of American securities would be unloaded to meet the eventualities that might arise out of the Balkan situation. Just think of it, $500,000,000 which the American market had to absorb. So you can readily see that when you look beyond the Philippines you will understand present conditions.

"As a matter of fact the local situation has been better than could reasonably be expected under present conditions. After all, credits depend largely on sentiment and I should advise you to look at things from the cheerful side. As I said before, I am with you in anything that I or my colleagues on the commission can do to further your interests. I can assure you that we all desire your utmost prosperity.

"I am now here six months. The law compels the chief executive to co-operate with the legislature and for that reason I found such an amount of work before me that I had to forsake practically all social and recreative activities. It was not that I did not want to meet you before; it was a physical impossibility. You are many and I am only one, and could I sub divide myself into ten persons I could not grant all the interviews that are requested of me.

"I assure you that I am profoundly grateful to have had this opportunity of meeting you all to-night and I hope that in the future misunderstandings between us will be barred. In the east, it seems everything is rumor. Something starts as a rumor, lives as a rumor, and dies as a rumor without having had any foundation in fact. Be cheerful, and eventually all will be well."

This straightforward address was extremely well received by the guests. Suggestions had been made covertly that the Governor-General was quite out of sympathy with the legitimate aspirations of the American community. That such a charge was absolutely baseless was known to all unprejudiced people who had had an opportunity of learning Mr. Harrison's views, but there were many to whom such an opportunity had not offered. It is a plain statement of truth that the executive has no power to determine the political status of the Philippine Islands. Congress alone can supply the solution of this problem, though it may be assumed that the reports and recommendations of the executive must needs carry weight. That being so it was reassuring for the business community to learn that the Governor-General was in entire sympathy with them and had every desire for their prosperity. This may be taken to mean that he will recommend that whatever steps are taken in regard to the Philippines the rights of Americans in the Islands should be effectively safeguarded. The increased confidence Mr. Harrison's speech has inspired should go far towards restoring a normal condition of affairs in the local business arena.

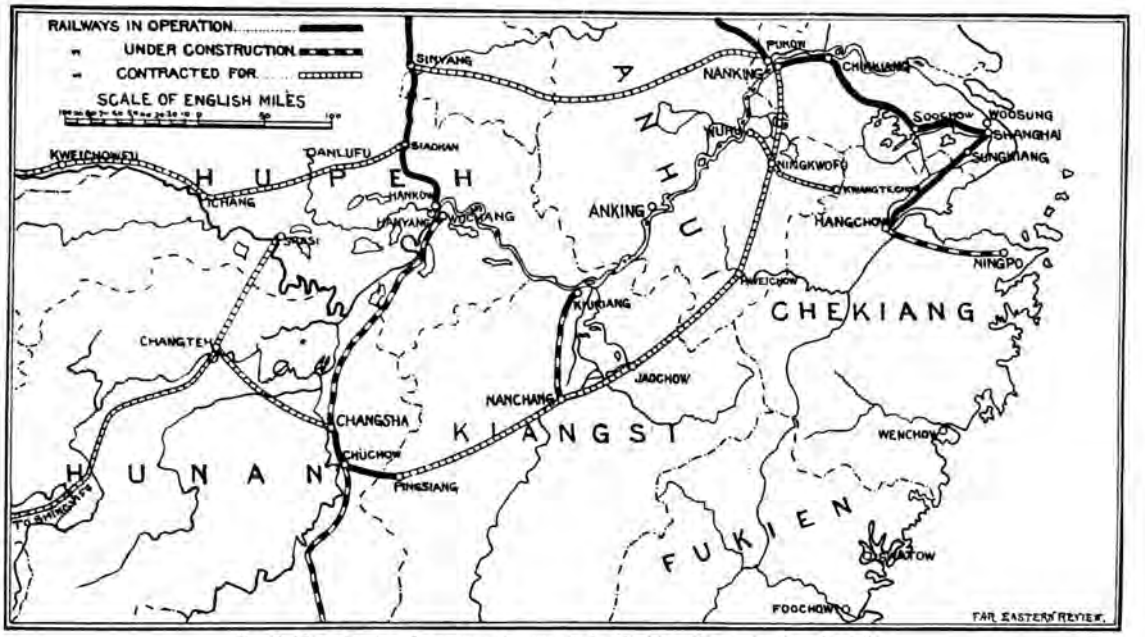
THE NORTH CHINA OILFIELDS

In certain quarters a tendency has been shown to doubt whether the Standard Oil Corporation of New York intended seriously to carry out the agreement made recently with the Chinese Government for the exploitation of the North China oilfields. An amply sufficient answer has been given by the arrival in Shanghai early in April of a staff of engineers and drillers. These men will proceed to the oil fields directly the preliminary reports of the experts who are investigating the oil deposits are to hand. It will be remembered that by the agreement the oilfields of Shensi and those near Jehol were to be investigated in the first instance. The experts proceeded to Jehol immediately the Agreement was signed. After completing their investigations in this locality they will visit the Shensi fields.

Another indication that the Standard Oil Company was thoroughly in earnest is afforded by the despatch of a special steamer with 1800 tons of drilling machinery to North China. The withdrawal of so many expert geologists and workmen from other work and the prompt provision of necessary machinery is a satisfactory proof that as far as the Company is concerned no time is to be lost in proving the value and extent of the oil deposits. If the prospects warrant it, it may be confidently assumed that equal celerity will be shown in starting active operations, and that China will have provided for her a new and increasingly valuable source of revenue. It is sincerely to be hoped that the investigations prove satisfactory, as the success of the co-operation of the Chinese Government with a foreign company with expert knowledge, wide experience and practically unlimited capital, would prove the forerunner of other arrangements of a similar kind. This is the one sane and safe method by which China can overcome her financial difficulties and develop the resources which would otherwise continue to be untouched. The riches that are hidden in the bosom of China

THE NANKING-NANCHANG-PINGSIANG LINE

The contract lately negotiated between the Chinese Government and the British and Chinese Corporation for the construction of about 800 miles of railway between Nanking and Pingsiang, is one of the most important recently entered into in connection with the development of railway communication in China. The line will traverse and extremely rich portion of China, and will be the means of giving the railway already in operation between Shanghai and Nanking the assistance that it needs to make it at once a paying concern. Apart from this aspect of the question, the line will be of great assistance in developing the provinces of Anhwei and Kiangsi.



Sketch Map showing the proposed route of the Nanking-Nanchang-Pingsiang line.

The accompanying map shows the proposed route of the line. Roughly, it will strike almost due South from Nanking to the prefectural city of Ningkwo. A branch line will connect with Wuhu on the northern side, and with Kwang-te-chow to the East. From Ningkwo-fu, the route will be south-westwards to the prefectural city of Hweichow, and thence will proceed to Nanchang, the capital of Kiangsi province, whence it will run west by south to Pingsiang, the terminal of the short railway to Chuchow, on the line from Hankow to Canton.

In the past there was much talk on the part of the gentry to build lines to cover this route, but nothing tangible ever resulted. In 1913 the gentry of Kiangsi formed a company and established offices to build a line between Nanchang and Pingsiang,* a survey of the route having been made. The whole of the country traversed by the railway is under cultivation. It is somewhat mountainous, but rich in tea, cotton, and industries. There are extensive deposits of coal; and gold, silver, copper, and lead mines have been worked by native methods in the past.

Altogether, the project is one of great value to British interests, and while being of benefit in that direction, it cannot fail to be of tremendous importance in the opening up of China. The connection of Wuhu with the Hinterland is important, inasmuch as that port is a large distributing centre for the southern region. It is a Treaty Port, and already exports a largely quantity of rice, wheat, cotton, tea, timber, sugar, paper, furs and feathers, though rice, cotton and tea rank foremost as exports. Hweichowfu is situated in the richest section of Anhui province; is the centre of the tea packing district, enjoys the distinction or being important industrially, and is famous for its Indian ink, its engravings on copper, and its varnish. In other places, says Père L. Richard, silk is manufactured, and iron works are carried on.

Mr. S. B. Shen who is associated with the survey of the Nanking-Pingsiang Railway.

The agricultural products of Kiangsi province are chiefly rice, cotton tobacco, and hemp; tea being mostly grown in the northwest. The mineral wealth has not been availed of as much as it might have been except at Pingsiang—where the new railway will connect with the line already existing. There coal mines have been already in operation for some time.

Nanchang, the capital of the province, stands in the centre of an alluvial plain, and was originally built on the shore of the Poyang Lake, which has since receded 30 miles northward. It is an important treaty port, and has some manufactures.

The city of Jaochowfu is the great emporium for the sale of porcelain, while Kingtehchen, which will probably be tapped by the railway, is the centre of the oldest procelain manufactures in the province. This place was established in A.D. 1004 under an Emperor of the Northern Sung dynasty. The kilns destroyed by the Taiping rebels have been rebuilt, but the procelain turned out is far from equal in colour and finish to that of former times. At the present day it has some 160 furnaces instead of 500, and employs 160,000 workmen instead of 1,000,000, according to Père Richard. The finest procelain manufactured used to be despatched annually to Peking, the remainder being sold cheaply throughout the country; though a small amount of fancy articles is exported abroad.

* See FAR EASTERN REVIEW, March 1913.

"THE INDUSTRIAL HARBOUR"

An attractive catalogue with the above title has been issued by the Deutsche Maschinenfabrik A. G., Duisburg. The 152 pages are profusely illustrated with pictures of electrically driven travelling cranes, revolving cranes, locomotive cranes, slewing cranes with tilting bucket, with patent grab and so forth. Every kind of loading and transporting appliance is shown. Some idea of the extent of the operations of the Deutsche Maschinenfabrik A. G. can be gained from the fact that they supplied about 300 cranes to the town of Hamburg, 36 gantry cranes to the harbour at Montevideo, 20 gantry cranes to the harbour of Yokohama, 15 to Bremerhaven and a similar number to Ghent and nine to Genoa. Moreover the Company has built 63 giant and floating cranes. Its monthly turnover in 1912 was over three million marks.

This extremely comprehensive and complete catalogue will be of undoubted interest and value to those who wish to know the latest developments in the time and labour saving methods of handling and transporting heavy goods.

Under the Board of Finance.

1 The Board proper and offices under its direct control... ...	774,860	
2 Offices in Peking ...	6,990,009	
3 Salt Administration	8,271,778	
4 Shui-wu Ch'u and Maritime Customs	8,536,293	
5 Native Customs ...	1,114,360	
6 Imperial pensions...	6,000,000	
7 Allowance to Bannermen and Ching Tombs	9,033,970	
8 Provincial expenses	11,265,878	
9 Public loans	151,751,036	
10 Reserve fund ...	6,000,000	
		210,345,180

Under the Board of Education.

1 The Board proper	871,946	
2 Schools under the direct control of the Board	1,348,938	
3 Subsidiary offices under the Board ...	271,862	
4 Students abroad sent by the Board	341,499	
5 Supplementary expenses	1,302,130	
6 Provincial Expenditure	1,070,840	
		5,207,215

Under the Board of Army.

1 The Board proper and offices under its direct control... ...	35,953,830	
2 General Staff office and offices under its direct control ...	1,681,871	
3 Military expenses in the provinces ...	91,040,781	
4 Military expenses on the frontiers ...	7,585,012	
		136,804,494

Under the Board of Navy.

1 The Board proper and offices under its direct control... ...	7,088,051	
2 Naval expenses in the provinces... ...	577,830	
		7,665,881

Under the Board of Law.

1 The Board proper... $	445,627	
2 Offices in Peking ...	945,489	
3 Judicial expenses in the provinces... ...	13,280,709	
		14,671,825

Under the Board of Agriculture and Commerce.

1 The Board proper and offices under its direct control... ...	4,094,058	
2 Provincial Expenditure	989,328	
		5,083,386

Under the Board of Communications.

1 The Board proper and offices under its direct control... ...	930,616	
2 Provincial Expenditure	4,261	
		934,877
Total Ordinary Annual Expenditure		$423,684,122

EXTRAORDINARY

Under the Board of Foreign Affairs.

1 The Board proper... $	196,800	
2 Legations abroad ...	629,000	
3 School of Russian language	870	
4 Provincial Expenditure	186,553	
		1,013,223

Under the Board of Home Affairs.

1 The Board proper...	960,063	
2 Offices in Peking ...	582,501	
3 River police in the provinces...	405,954	
4 Buildings and constructions in the provinces...	1,662,762	
5 Investigations in provinces...	228,176	
6 Charity expenses in the provinces	53,750	
7 Expenses for prohibition of opium-smoking in the provinces	87,540	
8 Pacification and sundry expenses in the provinces...	277,114	
		4,263,860

Under the Board of Finance.

1 The Board proper and offices under its direct control... ...	257,615	
2 Offices in Peking ...	963,905	
3 Salt administration	20,841,671	
4 Maritime Customs	2,306,975	
5 Native Customs ...	10,407	
6 Bureau of Printing	669,375	
7 Special expenses provided for in the annexes of the Reorganization Loan contract	7,084,392	
8 Provincial expenditure	438,803	
9 Public loans	148,986,471	
		181,568,614

Under the Board of Education.

1 The Board proper... $	25,000	
2 Schools under the direct control of the Board	1,380,675	
3 Subsidiary offices under the Board ...	182,400	
4 Students abroad sent by the Board	54,580	
5 Provincial expenditure	58,080	
		1,701,035

Under the Board of Army.

1 The Board proper and offices under its direct control... ...	19,830,921	
2 The General staff office and offices under its direct control	505,747	
3 Military expenses in the provinces ...	4,713,974	
4 Military expenses on the frontiers	1,850,876	
		26,910,518

Under the Board of Navy.

1 The Board proper and offices under its district control ...	1,307,014	
		1,307,014

Under the Board of Law.

1 The Board proper...	279,012	
2 Offices in Peking ...	74,900	
3 Judicial expenses in the provinces	16,400	
		370,312

Under the Board of Agriculture and Commerce.

1 The Board proper and offices under its direct control... ...	569,570	
2 Provincial expenditure	390,165	
		959,735

Under the Board of Communications.

1 The Board proper and offices under its direct control ...	119,960	
2 Provincial expenditure	337,983	
		457,843
Total extraordinary annual expenditure		$218,552,754
Total of Ordinary and Extraordinary Annual Expenditure		$642,236,876

RAILWAY PASSENGER TAX IN CHINA*

[By Ching-Chun Wang, Ph.B. in C.E., Ph.D., Vice-Chairman of the Commission on the Unification of Railway Accounts and Statistics.]

Recently we have heard a good deal in connection with the announcement that China intended to follow the example of England, Germany, and other European nations in imposing a tax on railway tickets. That is, when a passenger buys his ticket he will be required to pay an extra charge equal to about 5 to 15 cent. of the fare. While admitting the necessity of securing revenue from every possible source in order to ameliorate the present financial stringency, and putting aside the political questions involved in such a matter, we propose to examine the question of imposing such taxes on railway tickets from a railway and economic point of view. In so far as what China intends to do in imposing such a tax is to follow the example of the West, we may, first of all, examine under what conditions and in what spirit some of the Western nations actually impose that tax.

Beginning with England, we find it has been imposing such taxes on railway passengers for years. During the early part of the 19th Century, when the principal means of land transportation was the stage coach, duties were levied on passengers for various purposes. When railways were invented, in the early part of the last century, they were placed under the same category as the highways and stage-coaches, and accordingly the existing laws of levying duties on passengers were made to apply to this new means of transportation.

The first law governing the imposition of duties on railway passengers, was passed in the reign of William the Fourth. This Act was repealed in 1842, and a new law passed (5 & 6 Vict. Cap. 79), which provided that a duty of 5% should be levied upon all sums received for the conveyance of passengers and that the proprietors of the railways were held responsible under penalty, for the proper payment of these duties.

In 1844, another law was enacted (7 & 8 V. C 85 S 9) which provided that no tax should be levied upon the receipts of any railway company for the conveyance of passengers at fares not exceeding one penny per mile. This act was amended in 1863 (26 & 27 Vict. C. 33). It was amended again in 1883 by the Cheap Trains Act (46 & 47 Vict. 34), which provided that fares not exceeding the rate of one penny per mile should be exempt from all duty and that the duty on fares exceeding the rate of one penny per mile, for conveyance of passengers between stations within one urban district, was reduced to 2½.

Briefly, the above is the development of the law in Great Britain governing passenger duties. The railways in fixing their fares constantly keep in mind these impositions. The Government, however, gets very little from this source of taxation. Taking 1911 as an example, while the gross passenger receipts were about £53,000,000, the total passenger duty collected amounted only to about £300,000, which is about one-half per cent. of the gross receipts. This is due to the fact that on account of sharp competition and in order to develop the passenger traffic, the British railways have so reduced their fares that practically

* Substance of a memorandum submitted to the China Railway Association, by Dr. C. C. Wang at the request of that organization.

only first class traffic is now liable to this tax. As the great majority of the people travel 3rd class and the gross receipts from 1st class traffic are comparatively insignificant, this tax is becoming nominal. Thus out of a total number of 1,326,316,990 passengers carried by the railways in 1911, only about 30 million, or less than 2.5%, were 1st class passengers. In other words, the British Government only tax a very small fraction of her well-to-do travellers, who do not mind paying for extraordinary luxury or "dignity," while the great majority of the people are exempt from this duty by travelling 3rd class. It must be pointed out here, however, that the 3rd class accommodations and facilities in England compare favourably with those of many 1st class carriages in the East.

On account of the fact, that the people in Ireland are financially less favourably situated than the people in England and Scotland, and that in order to avoid running the risk of arresting the necessary amount of travel in that island, as well as for some other reasons, the British Government decided from the beginning to exempt Ireland from all these duties.

From the above, it may be seen that this tax has not only failed to bring to the British Government the expected amount of revenue, but also has proved very unpopular. In fact, I am authoritatively informed that there is a movement on foot to abolish the duty entirely, and those who are familiar with British railway affairs know that the work of the Travelling Tax Abolition Committee and other organizations, whose object it is to hasten the unconditional abolition of railway passenger duty, is making much progress.

Turning to Germany, we find similar results as in Great Britain. Of all the nations which have State railways, Germany is acknowledged to be the most successful. In Germany the "Imperial Ticket Tax," as duties on passengers are called, ranges from about two per cent. on tickets of the 3rd class to something like 15% on long distance tickets of the 1st class. The 4th class, however, is exempt from this duty, thus making the higher classes pay more. As to the result of the experiment, I cannot do any better than to repeat what a German railway authority, with much personal experience and knowledge about this tax, once wrote to me. This gentleman stated that taxes are nowhere popular, but no tax has been so unfavourably received in Germany as that on railway tickets. Soon after the introduction of this form of taxation, a popular movement was made to obstruct it. To show their opposition, the people organized many societies for the special purpose of defeating the law. A rush was set in, and higher class travelling went to lower classes. As a matter of fact, 1st class paying passengers are now almost unknown in Germany, and 2nd class travelling shows a great decrease, while 3rd class travelling has extended very much. More than that, the 4th class, which formerly was only patronized by the labouring people "is now crowded," to quote the exact words, "by passengers of all standing." This change of habit to travel by lower classes, besides reducing railway revenue, has affected the receipts of the ticket tax, which in 1906 were about $3,000,000 less than estimated.

As the railways are owned and operated by the State, and all receipts, whether in the form of duty or fares, ultimately go into the State Treasury, the net result of this imposition of duty and decrease in railway revenue must be obvious. Thus not only the Government's expectations from the tax are not fulfilled, but it has to bear considerable losses in the actual fares, to say nothing of the irritation which the tax has produced among the people. As a result of their experience, both the Government and Parliament are planning, we understand, to abolish this tax at an early date.

From this brief sketch of the development and spirit of the application of the law concerning passenger duty in Great Britain and Germany, we may see that the fundamental principal underlying the whole question of passenger duty in these two countries is, on the one hand, to tax those who want to travel with exceptional luxury, with whom a duty of 5 or 10 per cent. on the fare does not enter into much consideration, while on the other hand, to exempt from this duty the average people who need to travel and who call only for comfort and convenience rather than luxury. As the writer is requested only to find out what these three countries are doing in this respect and under what conditions it is done, he will not give any opinion as to whether China should follow the example of Germany and Great Britain to introduce this form of taxation or to follow America in avoiding it, because he feels that in this matter as well as in many other things, indiscriminate copying or imitation is often dangerous. He wishes to emphasize, however, that should China decide to follow the example of Great Britain and Germany in introducing this duty, she cannot over-emphasize the fact that she should also constantly keep in mind the spirit of the British law and the practice of the German Government, in taking into consideration the paying capacity and the urgent need of more travel of the people, so that the middle and poorer classes, who have already more than their handsful in carrying on their uphill struggle, may be exempt from this additional burden.

Furthermore, the fact that there are such active movements in both Germany and Great Britain, in favour of the abolition of this duty after considerable trial, also reminds us to be especially careful not to introduce a foreign institution which may soon be discarded by its originators.

It must also be pointed out that the general rise in fares which will naturally follow the introduction of the duty will have two effects. First, it will reduce or "kill" what is called pleasure travel; secondly, where the general level of fares is comparatively high, and where there is more than one class of service, as in China, such a general rise in fares is likely to lead people to avail themselves of the lower classes, as actually took place in Germany. Insofar as we have practically no pleasure travel, we have not much fear from the first effect. From the second effect, probably we cannot escape, and the net result will probably be that the total receipts from both fares and duties after the imposition of the tax will not very much exceed the former normal receipts from fares alone. The only difference will be that more people will crowd into the crowded third class, which certainly is a condition to be avoided. Indeed, it is worth while to-day to consider whether it is advisable to lower the standard of travel of the people.

This leads us to conclude, that after all the advisability or otherwise of the imposition of such a duty, when considered from an economic point of view, largely depends upon two factors, i.e.—the existing level of fares and the comparative paying capacity of the people. We, therefore, give a table which contains the approximate figures of the average fares for the different classes in various foreign countries: (*See table I. next column*).

From this table it may be seen that by casting aside the differences in accommodation and in the purchasing power of the dollar, &c., the class fares in China are only a little less than in France, Belgium and England, while they are considerable higher than in all other counties cited in the table. Moreover, in the case of the 2nd and 3rd class fares, ours are about 40 per cent higher than those of Japan, and more than double of India. Insofar as the travelling conditions and earning capacity of our people are similar to those of India and Japan, and also insofar as most of our people travel second and third class, this comparatively high level of fares must be a serious obstruction to the proper development of passenger traffic in China.

But our comparison of fares in different countries will be misleading if it is made only upon the basis of the ordinary class fares, for a great proportion of the passengers do not travel by the class fares. Excursion and numerous other exceptional fares, which are usually very much cheaper than the class fares,

TABLE I.

Country.	Approximate capital outlay of line per mile, in dollars.	Approximate average Fares per mile including ticket duty, in cents. Class 1st	2nd	3rd	4th
England	600,000	6.5	4.3	3.8	
France	350,000	6.5	4.3	2.8	
Belgium	204,000	5.6	3.8	2.3	1.5
Germany	140,000	5.3	3.4	2.3	
America	150,000	3.9			
Austria	210,000	5.0	3.0	1.7	1.3
Russia	160,000	5.0	3.0	2.2	
Japan	86,000	4.6	2.7	1.5	There is an intermediary fare between 2nd and 3rd.
India	90,000	4.2	1.8	0.8	
China	80,000	5.1	3.6	2.0	

and which are little known in China, have been developed so extensively in many foreign countries during recent years, that the average fare actually paid by the ordinary traveller is usually much below the class fares.

Beginning with England, we hear much of the "penny-a-mile" 3rd class fare. But many people overlook, or are ignorant of the fact, that these class fares are conspicuous only by their absence. Indeed, competition has been felt so keenly by the railways in England, that these class fares are adopted only in rare cases, while the great bulk of travellers go by reduced fares.

To show the nature of these reduced fares we may take the 3rd class excursion day fare of 3/- from Manchester to Blackpool, as an example. The distance is 49 miles, which makes the return trip 98 miles. The ordinary class fare is about 8/- or four cents per mile, while the excursion fare gives the passenger the privilege of travelling at a trifle over 1.3 cents per mile by some of the best trains of the World, every day in the year. The Great Central Railway Company, which is know as a go-ahead concern, has recently introduced the attractive fare of 3/3d from Manchester to Cleithorpes, a distance of 103 miles in each direction, which represents about 0.8 cent per mile and which has attracted a great many people to travel between these places. In addition, there are the numerous half-day and day excursion fares, short period tickets, short and long date week-end excursions, long distance excursion fares, picnic and pleasure-party fares season tickets, surburban coupons, &c., &c., each of which means reduced fares.

These examples are by no means exceptional cases. In fact similarly low fares are in use over all the lines, and it is by these low fares that a great portion of the passengers are carried and the dense passenger traffic in England is built up.

Belgium—What is true in England is similarly true in many other countries. Thus comparing our fares with those of Belgium, we must first of all point out that the Belgian fares are fixed on the zone or tapering basis, that is the longer the distance the less the fare per mile. On the surface, we notice our class fares are a little lower than those in Belgium. But in this case, as it is in that of Great Britain, we must say that such a comparison is at least incomplete if we overlook the numerous reduced fares, such as the return class fares, school tickets, tickets available for 5 or 15 days, or for 3, 6, 9 or 12 months over all the railways of Belgium, and other season and excursion tickets, all of which reduce the fares considerably below the class fares

Austria and Hungary—In Austria, the ticket-tax ranges from 0 per cent. on the "Lokalbahnen," or branch lines, to 12 per cent. on the "Hauptbahnen" or trunk lines. There is no uniform system of fixing fares, but in many cases the zone system is adopted, according to which the fares are calculated in zones of 10 kilometres; each portion of 10 kilometres being considered as 10 km., and the longer the distance the less the fare unit. Thus, while for distances from 1 to 100 miles the 1st, 2nd and 3rd class fares are 5.0, 3.0 and 1.6 cents per mile respectively; for distances over 200 kilometres, they are 4.7, 2.7 and 1.3 cents per mile, while for distances over 400 miles, they are 4.4, 2.6 and 1.1 cents per mile respectively.

In Hungary, the ticket tax also ranges from 6 per cent. to 12 per cent. Like in Austria, the fares are mostly on the zone basis. The distances are divided from each station into specific zones, within which, in the fixing of fares, each dtstance up to the limit of the zone is calculated. The first 50 kilometres, is divided into five zones of 10 kilometres., each, the next 30 kilometres into 2 zones of 15 kilometres each, the next 20 kilometres forms one zone by itself, and the next 100 kilometres is again subdivided into four zones of 25 kilometres each, thus the first 200 kilometres, is divided into twelve zones of different sizes, beyond which distances are divided into zones of 50 kilometres each. The fares are also similar to, but lower than, those of Austria, being less for the longer distances.

India.—In India, the Government, with the help of a technical staff and with the advice of the Railway Conference Association, fixes the maximum and minimum fares. The practice there has been to encourage traffic by low fares, as shown by the figures in the previous table, and the result has given every satisfaction. Since the introduction of the low fares in 1884, the number of passengers has increased almost three-fold, while the total amount of receipts has more than doubled itself. These results certainly commend themselves to the serious consideration of railway administrators.

From the above it may be seen how misleading it will be, if we simply compare the ordinary class fares and overlook the real traffic conditions in the different countries. And it is safe to say that when we take these reduced fares into consideration, we shall find that fares in China are not any lower than in France and England and that they are considerably higher than in Germany, the United States, and many other countries.

In comparing the fares of the different countries, besides taking the special fares and difference in traffic conditions of the different countries into consideration, we shall also keep in mind the differences in the purchasing power of money in these countries. A dollar, if we take it as the unit of comparison and as being equal to fifty cents U. S. Gold, two German marks or two shillings of English money, generally speaking can purchase about three times as much in China as it can in Europe or America; that is, if we can purchase three dozen eggs, or three pounds of beef in the United States with one dollar, we shall be able to buy about nine dozen eggs or nine pounds of beef in China. In other words, what costs three dollars in Europe or America should cost us no more than one dollar here. In so far, as railway transportation is but a commodity for sale by the railways, to be purchased by the travellers, then if a mile costs three cents in Europe or America, it should cost no more than one cent in China. Thus in comparing the different fares or rates, it is not the dollar itself, but the purchasing power of the dollar that forms the proper unit or basis of comparison. Since this is so, although the two cent per mile, third class fare in China as set forth in the above table, is 0.8 of a cent less than that in France and 1.9 cents less than in England when measured by the dollar, it really is almost three times as high as those in the two countries mentioned if it is properly measured by the purchasing power of the dollar. To this difference of the purchasing power of the dollar in China and elsewhere, if we add the difference of the earning or paying capacity of the people, we can readily see that the difference between our fares and those in Europe and America is enormous and that if we experiment with any changes of our railway fares at all, we should unquestionably lower them first rather than raise them. In so far, as the reducing of fares invariably increases the amount of traffic, the experiment of lowering our fares may not necessarily result in the decrease of our net railway receipts, in which case it will mean the net beneficial result of having more people enjoy the advantages of travel with the same net returns to our treasury. On the contrary, if properly managed, a proper reduction of fares may even bring more net revenue to the railways, as has often been the case elsewhere. Then again, it is clear, that when the economic and social conditions of the average people are taken into consideration, our fares should not be based upon the existing fares in England or France, where the purchasing power of the dollar and the earning or paying capacity of the people are so different from ours, but rather be guided somewhat by the fares in India and Japan, where economic and operating conditions are more similar; or perhaps better still, to strike a middle course between the two extreme cases instead of following either.

This, of course, leads to the question of considering the fares from a proprietary point of view; that is the Government or the companies as owners of the railways, have a right to charge a fare which will bring to them a reasonable return on the amount of money, which they, as proprietors, put into the railways. In this case, besides taking the rate of interest on the investment the usual way of comparison, is to take the cost per mile of line as a basis. By referring to the first column of figures in the previous table, we may see that the capital outlay per mile in China is considerably less than in Europe or America and hence the fares should also be less. Moreover, if the proprietors may make fares by using the cost of the line as a basis, the passengers may also use the fares as a basis for demanding travelling facilities and accommodation. If we consider the question from the latter point of view, and since our first class accommodation is not much better than foreign second class facilities, and our second class is certainly worse than foreign third class, the travellers may say that we should compare our first class with foreign second class and our second class with their third class fares and not the corresponding classes.

We must also add, that in the administration of railways, especially where the State furnishes the capital, the Government should constantly bear in mind that on the one hand the railways do not lose any revenue by quoting unduly low rates and on the other hand the public is not oppressed by too high charges so as to arrest the necessary development of industry and commerce. In so far as China is the only country which has no law for the regulation of rates and fares, it becomes important that the whole situation, especially the paying capacity of the people and the existing comparatively high rates, should be taken into careful consideration, before introducing such a tax at the risk of arresting traffic development.

When we take the foregoing facts into consideration and notice that such a tax will not bring much revenue, as shown by the experience of other countries imposing such a tax; that there is a great need of development of passenger traffic in China, and that there are constant quarrels between the station masters and the travellers on account of making the small changes of money in the purchase of tickets, which fact is well known to any traveller, we doubt very much whether we should add another factor of small changes of money by imposing this tax and introduce one more factor of irritation, by making the railway authorities assume the repulsive duty of tax collectors and loading the people with the additional burden of being taxed for going about.

If the Government is earnest in its desire to get more money out of the railways it can do no better than to abolish all likin and other troublesome taxes along the railways. These barriers create much trouble for the railways and give most undesirable obstacles to the business men, while producing but little revenue for the Government. Indeed, likin, worse than all other drawbacks, is interfering most seriously with the development of traffic, and hampering domestic trade in China.

Upon the abolition of these obnoxious barriers, the Government can easily require the railways to guarantee to pay to the Government the same or even greater amounts than what are now paid by these numerous barriers. By so doing, the Government will not only be able to increase considerably its likin revenue and its railway receipts, but will also be rendering a great service to trade. Since what the merchants hate is not so much the payment of the likin charges as the trouble and unreasonable exactions which the likin collectors impose under the excuse of these charges, the abolition of these barriers and the guarantee of the likin revenue by the railways will bring considerably more revenue to the Government on the one hand and prove a boon to trade. As soon as these taxes are abolished goods traffic is bound to grow, which will again bring more prosperity to the country and more railway revenue to the Government, the net result of both of which facts will be to China's increasing advantage. By imposing the ticket tax we can get very little money and we shall be creating opposition among the people, while by abolishing likin along railways we shall be helping all people and incurring the displeasure of only the likin collectors. Instead of trying to scrape up a trifling sum of money by irritating millions of travellers and good business men, as well as discouraging trade, why not try to create a source of increasing revenue by this beneficial means? This is what the writer desires strongly to recommend to the consideration of the authorities in charge of finance and transportation.

PEKING PRINTING AND ENGRAVING BUREAU

The Bureau of Printing and Engraving at Peking has been operated for some considerable time at a loss. As the Bureau is considerably in debt to the American Bank Note Company an offer has been made by the latter to take over the Bureau. The company is willing to lease the existing machinery, instal whatever additional plant may be required and to enter into an arrangement to print the Government's bonds, notes and stamps.

EXTENSION OF THE DAIREN WATERWORKS

The work of laying a light rail line, about 8 miles in length, from West Shahokou to Malantun, where the water source of the city's Waterworks is situated, was started by the Japanese contractor yesterday, says the *Manchuria Daily News* of April 6. The light rail line is to be used for carrying supplies required for the extension of the equipments at the water source. These supplies will be transported from Dairen as far as West Shahokou by tramway, and will be kept at a depot to be founded there for the purpose.

The construction of the dam was to be begun early in May.

CONSTRUCTION OF RAILWAYS IN CHINA

The Ministry of Communications has addressed the following petition to the President requesting that no loans should be contracted for the construction of new railways which have not yet been proposed or started:—

For want of means of communication much inconvenience has been felt for the progress of administration and the economic condition of the country. Those who are anxious about the situation of the country have unanimously advocated that the only means of salvation lies in the construction of more railways. Since the inauguration of the Republic the idea of inviting foreign capital for the development of railways has become deeply rooted in the mind of the public. Therefore for the past two years this Ministry has, according to the internal and external conditions of the country, drawn up plans for the construction of all the important lines, as reported from time to time, and it has been estimated that the mileage of these proposed lines is tens of times longer than before. Consequently there are thousand and one difficulties to be solved. The railways which have already been constructed have to be properly managed. The railways the ownership of which has been transferred to the Government, have to be settled. Those which are under construction should be continued properly. Those the concessions of which have been given out, should be built according to the time limit. Men should be trained immediately to manage these lines, and diplomatic intercourse should be attended to with care. The interest and principal of foreign loans should be met in due course.

Hitherto we have contracted foreign loans for the construction of railways, but on account of the lines being unskilfully chosen or want of forethought, the Government has to put in tens of millions of dollars to assist in the enterprise. Moreover for want of centralization of finances this Ministry has to shoulder the whole responsibility. Therefore the whole year round this Ministry has to attend to the means of financing the railways, and consequently there has been no time left to attend to the other immediate affairs. Hence many complaints have been received. If in former days more attention had been given to the railway affairs, better plans made and the redemption of loans carefully planned there would not be so many difficulties besetting us to-day. However the past serves a good warning. No hasty steps should now be taken to injure the general situation and to sow difficulty for the future. Therefore in every step we now take it should be done with utmost care. Although there is no comparison between the mileage of railways of this country and that of the other countries in Europe or America, it must be borne in mind that the development of railways must be in proportion to the development of industry, the politics and the economical condition of the country. Moreover there must be a general plan for all the lines of the country. Hence this Ministry is now being engaged in the work of making the general plans, and at the same time we have been collecting the ideas of experts of this country. Hereafter it is desirable that no blunder should be made. Therefore it is hereby requested that a policy for the construction of the railways should be definitely fixed. Henceforth, regarding the contracting of loans for the construction of railways, with the exception of the concessions the contracts of which have been signed, or the lines have already been proposed all the other railways projects should be stopped.

The President approved the proposal and instructed the Ministry to enforce the same.

ELECTRICAL ENTERPRISE IN KOREA

Up to the end of last year official permission was granted to 18 companies desirous of undertaking electric enterprises in Korea. The aggregate capital of these companies amounted to 11,880,000 *yen* and the total capacity of the plants to be possessed by them for generating electricity was 8,100 kilowatts. Fifteen companies with a capital of 11,730,000 *yen* were actually engaged in business with a paid-up capital of 6,497,840 *yen* between them. The number of householders receiving the supply of electricity was 11,058, the lamps installed in these houses numbering 77,880 in all.

This year, permission has been granted to the electric company at Suwon, which has a subscribed capital of 60,000 *yen*, of which 21,000 *yen* has already been paid in. The machinery of the company is able to generate 40 kilowatts of electricity. At present the company supplies electricity to about 300 households. Two more electric companies, one at New Wiju and the other at Hamheung, are now engaged in construction work.

HUPEH CEMENT WORKS

A Peking correspondent states that he is reliably informed that the trouble between the French Banque Industrielle and the Hupeh Cement Works has been settled by the assistance of the Cheehsin Cement Company of Tangshan which, with the permission of the Chinese Government, has lent the sum of Tls. 1,400,000 to the Hupeh Cement Works for the payment of the French loan and its Japanese creditors. Thus the Hupeh Cement Works, of which Mr. Cheng Chu-fu will probably remain Director, will be administered by the Cheehsin Cement Company. In view of the success of the Tangshan Cement Works during the last few years, it is believed that there is a good future before the Hupeh Works.

The Chinese Cement Works at Canton has petitioned the Ministry of Commerce requesting that the Provincial authorities of Kuangtung should be instructed to protect the works and not allow foreigners to buy shares or interfere in any way with the enterprise.

In the course of a recent lecture on "Electric Traction," given in the large hall of London Bridge Station, Mr. P. Dawson, consulting electrical engineer to the London, Brighton and South Coast Railway, said that so far as the electrification of main line railways was concerned, equal progress had been made in Europe and in America. About 2,000 miles of single track had been electrified in each case. He regarded as the most important electrification scheme so far carried out that of the New York, New Haven, and Hartford Railway.

A rope railway, 75 miles in length, is to be put into operation in India. It will connect the rich country in the vale of Kashmir with the plains of the Punjab over the Himalayas. The line, it is claimed will be the longest in the world, the present longest being 22 miles and situated in Argentina. Sections will be 5 miles long, and most of the spans will be 2,400ft. The steel towers, some of which will be 100ft. high, will be braced, and double 1¼in. cables, 9ft. apart, will carry the steel cars. The carrying capacity of these cars will be about 400 lb.

The Seishin-Kwainei Railway, 60 miles in length, is to be constructed in the course of five years from the present fiscal year. A tendency has been observed these few years for a gradual increase in the imports to North Manchuria via the port of Seishin on the northeastern coast of Chosen. The markets of Japanese imports to Chientao and Hunchun are expanding. As the railway construction work progresses inland, the completed section will be utilized to quicken this tendency, and, when the whole line is finished, the trade system of the eastern part of Kirin Province on the Korean frontier will be revolutionized. Y. 200,000 is set apart chiefly for preparatory work.

During last March, the Electricity Works, Changchun, supplied 60,244 kilowatts of electricity for 11,650 lamps in addition to 122,152 kilowatts for motor power. The total earnings for that month amounted to Y.10,241, as against Y.5,478 for the corresponding month of last year. The demand for power use nearly doubled in the course of a year.

FAR EASTERN RAILWAYS

CHINA

The Chekiang Railway.—It is reported that a satisfactory arrangement for the handing over of the Chekiang Railway to the Government has been arrived at. The price to be paid to the shareholders of the company has not been officially stated, but is said to be $17,000,000.

Kirin-Changchun Railway.—The traffic receipts of the Kirin-Changchun Railway for March decreased to S. Y.67,788. The two terminal stations at Toutaokon (the junction between the S. M. and the K.-C. lines) and Kirin contributed the largest shares, giving S. Y.26,651 and S. Y.24,738 respectively. The Changchun Station followed with S. Y5,307. The receipts of the other stations were less than S. Y.2,000.

Pukow-Singyang Line.—It was the original intention to start construction of this line from Wu-i and Singyang simultaneously, but owing to the disturbed conditions in Honan this could not be done. The Director General, Mr. Shen Yun-pei has now given instructions that work should be started on the Singyang section as soon as possible.

Shanghai Nanking-Railway.—The following figures of traffic returns (approximately) for the week ended March 14 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	46,642	11,250	57,892
1913....	52,337	11,962	64,299
Increase.	—	—	—
Decrease	5,695	712	6,407

For thirty-seven weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914	1,754,463	364,222	2,118,685
1913....	1,555,812	340,804	1,896,652
Increase.	198,651	23,382	222,033
Decrease	—	—	—

Week ended March 21.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	54,688	12,610	67,298
1913....	50,512	11,430	61,942
Increase.	4,176	1,180	5,356
Decrease	—	—	—

For thirty-eight weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	1,809,151	376,832	2,185,083
1913....	1,606,324	352,270	1,958,594
Increase	202,827	24,562	227,489
Decrease	—	—	—

Week ended March 28.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	51,383	11,348	62,731
1913....	53,252	10,351	63,603
Increase.	—	997	—
Decrease	1,869	—	872

For thirty-nine weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	1,860,534	388,180	2,248,714
1913....	1,659,576	362,621	2,022,197
Increase.	200,958	25,559	226,517
Decrease	—	—	—

Week ended April 4.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	49,865	12,141	62,006
1913....	49,069	9,431	58,500
Increase.	796	2,710	3,506
Decrease	—	—	—

For forty weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	1,910,399	400,321	2,310,720
1913....	1,708,645	372,052	2,080,697
Increase.	201,754	28,269	230,023
Decrease	—	—	—

Week ended April 11.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914	60,434	12,799	73,233
1913	48,998	10,996	59,994
Increase.	11,436	1,803	13,239
Decrease	—	—	—

For forty-one weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	1,970,833	413,120	2,383,953
1913....	1,757,643	383,048	2,140,691
Increase.	213,190	30,072	243,262
Decrease	—	—	—

GENERAL

The Amur Railway.—The following information is from the report by H. M. Consul at Vladivostok, Mr. R. M. Hodgson, on the trade of that district in 1912:—

The Amur Railway, which is to connect, by means of a line entirely in Russian territory, the Siberian railway system with Khabarovsk and thence, by the already existing Ussuri Railway, with Vladivostok, has been progressing with unexpected rapidity. The distances on this line are as follows:—

	Versts.
Head section, from Kwenga to Urium ..	182
Western section, from Urium to Kerak..	596
Middle section, from Kerak to River Dyia	633
Eastern section, from River Dyia to Khabarovsk	480
Branch from Botchkaryoyo to Blagovestchensk	100
Short branch lines run to—	
Tchasovinskaya	28
Reynovo	63
Tchernayevo	40

Traffic on the head section has been open since 1910 and the western section was opened in the autumn of 1913. The whole of the middle section will be handed over for working in the autumn of 1914. Work on the eastern section is being pushed forward rapidly, and it is now likely that the whole line will be in use for local traffic by the end of 1914. The completion of the railway will, however, be impossible before the bridge over the Amur at Khabarovsk is finished, and this—an engineering work of real magnitude, for the bridge is to be 7,038 feet in length—cannot, at the earliest, be before the autumn of 1915. It is intended ultimately to divide the whole line into two parts, the eastern part to be known as the Amur Railway and to have its headquarters at Alekseyevsk on the Zeya River, and the western part, known as the Ussuri Railway, having its headquarters at Khabarovsk.

Russia is thus within measurable distance of executing, well within the projected time, the very formidable undertaking of constructing a railway 1,248 miles in length through country much of which was previously untrodden, and nearly all was uninhabited. Natural obstacles in the form of swamps and mountain ranges are met with all along the line except in the Zeya-Bureya district; the climate is extremely rigorous, and large tracts lie within the zone of perpetually frozen ground; moreover, it has been necessary to bring the whole working staff from great distances, mostly from European Russia. Under these conditions it is not surprising that the difficulties to be overcome were underestimated at the beginning, and that the expenditure has exceeded the original appropriations by some 40,000,000 roubles (about £4,222,000) or 20 per cent.

On the Ussuri Railway, important works are to be carried out, and 29,297,000 roubles (about £3,092,000) have been allotted for the purpose. The line is to be doubled throughout and between Kiparissovka and Nadyedjdinskaya, near Nikolsk, the permanent way is to be changed and a tunnel 2,450 feet in length cut. The branch line to Shkotovo is to be improved. The building of wharves for coal, timber and fish on the southern side of Golden Horn Bay renders a connexion with the railway system indispensable. A branch line, 14.37 versts in length, is to be constructed for this purpose from Pervaya Ryetchka—the first station out of Vladivostok on the Ussuri line—at a cost of 3,056,630 roubles (about £417,000). It will go round the Eastern extremity of the bay and will pass through a tunnel 4,200 feet long.

A further project now being investigated is the building of a railway line from Shmakovka on the Ussuri Railway near Lake Hanka to the coast at St. Olga, or from Khabarovsk to Imperial Harbour. The Ministry of Ways of Communication is at present studying the relative advantages of the two routes. Some connexion by rail with the coast of the Maritime Province is obviously necessary.

The land connexion with Europe is by the Siberian Railway, there being two express trains every week to and from Moscow, and one to and from St. Petersburg. The journey by these trains to London takes 12¼ days. A very considerable economy can now be effected by leaving the Trans-Siberian express and utilizing the daily express which has lately started running between Irkutsk and Moscow; this train does the journey in the same time and has a restaurant car and similar accommodation to the Trans-Siberian express.

Russian Railway Concession.—The Russian Far Eastern Press reports the acquisition of two valuable railway concessions by Russian subjects. One is for the construction of a railway from the station Manchuria, at the junction of the Chinese Eastern and Trans-Baikal lines, to Urga. which has been given to Mr. Badmaev, one of the pioneers of the trading firm of that name in the Trans-Baikal, which region was thickly sprinkled with branch houses during the building of the Trans-Baikal Railway. The second concession is for a line from Manchuria station to Nerchinsk Zavod and Sreytensk, granted to the former Minister of Commerce and Industry, Mr. Fedorov. This variant will proceed from the station Manchuria along the banks of the Argun to the station Olocha and beyond by the Olocha valley to Nerchinsk Zavod, and thence to Sreytensk on the Shilka. If these projects should be realized, Manchuria station will be an important junction on the borders of three states—Russia, China, and Mongolia. The Vladivostok correspondent of the "Japan Chronicle" says it is understood that Mr. Denisov, member of the Imperial Council and

President of the Board of Trade, has been largely instrumental in getting these deals pushed through, albeit in some quarters doubts are expressed as to the likelihood of there being money available in the present disturbed political condition of Mongolia. Be this as it may, Mr. Denisov appears to have satisfied himself on the spot, and to be engaged now in convincing others at St. Petersburg that for Russia the development of a widespread network of railways in the Far East is indispensable.

MANCHURIA

South Manchuria Railway.—The net profit for the current fiscal year ending the 31st inst. was estimated to be about Y. 5,000,000. The traffic earnings, up to last February totalled Y.20,197,000, as against the aggregate of Y.19,900,000 for the preceding fiscal year. A similar increase has been noticed in the other enterprises, such as mining, harbor, electricity, gas, shipping, etc. The net profit for the last fiscal year was Y.4,920,000, the gross profit and gross loss amounting to Y.33,540,000 and Y.28,620,000 respectively.

The traffic returns for the month of March were Y. 2,010,298, being a decrease of Y.548,218 compared to the corresponding month of last year. The decrease was owing to scarcity of Bean stocks due to the poor crops. The aggregate receipts for the fiscal year just closed reached Y. 22,237,833, being an increase by Y.2,330,377 on the earnings of the preceding fiscal year.

Chinese Eastern Railway.—The Chinese Eastern Railway has lowered the freight rates on coal from Ugolinaya which is the junction station to Sucheng Colliery, and Ippolitoffka which also connects with a small coal mine, to the other stations in North Manchuria. The comparative figures to Manchouli and Harbin are as follow:—

From		To Manchouli per pud	To Harbin per pud
Ugolinaya	old rate	21.10	9.50
	new „	13.10	5.88
Ippolitoffka ..	old rate	19.70	8.10
	new „	12.17	4.92

The management evidently hopes to supply coal as a cheaper substitute for firewood, which rose to 34 roubles per cube from about 20 roubles of a few years ago and appears settled about 27 roubles. Even Fushun Coal, which is sold at about 12 roubles per ton, is still cheaper by three or four roubles, if two tons of coal is computed to be equal to a cube of firewood calorific power in calorific power.

CHOSEN (KOREA)

Taiden-Mokpo Line.—Celebrations were held at Mokpo on March 22 in connection with the completion of the railway from Taiden, a town in central Korea on the Seoul-Fusan railway, to Mokpo on the South-west coast. The construction of the Taiden-Mokpo line or Honan Railway, as passed by the 26th session of the Imperial Diet, was planned to be carried out in 11 years beginning from the fiscal year 1910, but thanks to the influence of the present Governor-General, Count Terauchi who recognized the importance of transport facilities in Chosen, the original plan was modified and the time of construction reduced to five years instead.

The line starts from Taiden, a station on the Seoul Fusan Railway, and reaches to Mokpo 161 miles with 14.8 miles branching from Riri out to Kunsan. The surveying was begun in May, 1910, and the civil engineering work in October. Up to the end of the fiscal year 1911-1912, 69 miles—38 miles of the Taiden-Rokei section, 17 miles of the Kokei-Riri Section and 1.48 miles of the Riri-Kunsan Branch — were constructed and opened to traffic. Great engineering difficulties had to be overcome on the section passing through the beautiful and grand Noryong Mountain Range, situated between Seiyu and Chojyo Stations, for several large tunnels, one more than 3,000 feet in length had to be driven through hard rocks. Nevertheless the whole line could be opened at the beginning of January last to public traffic, much sooner than was expected.

TRAMWAYS

Shanghai Tramways.—The returns of the Shanghai Tramways (Foreign Settlement) for the week ended March 18, 1914, are as under:—

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,412.31	14,957.16
Passengers carried. . .	988,636	757,692
Car miles run	50,893	48,790

The loss by depreciation of subsidiary coinage for the week was $5,499.09 equal to 24.35 per cent. of the gross cash collected on the cars as compared with $4,228.13, equal to 23.49 per cent. for the corresponding week last year.

Week end March 25.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,080.09	15,623.23
Passengers carried. . .	966,908	792,783
Car miles run	61,044	49,274

The loss by depreciation of subsidiary coinage for the week was $5,393.88 equal to 24.36 per cent. of the gross cash collected on the cars as compared with $4,467.13 equal to 23.61 per cent. for the corresponding week last year.

Week ended April 1.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,505.03	15,470.40
Passengers carried. . .	992,098	782,940
Car miles run	60,865	49,375

The loss by depreciation of subsidiary coinage for the week was $5,562.53 equal to 24.46 per cent. of the gross cash collected on the cars as compared with $4,411.38 equal to 23.60 per cent. for the corresponding week last year.

The following is the traffic return for the month of March, 1914, and for three months ended March 31, 1914, with figures for the corresponding periods last year;—

	Mar. 1914. $	Mar. 1913. $
Effective receipts	81,216.62	69,167.94
Passengers carried	4,342,343	3,499,970
Car miles run	265,948	221,018
Loss by depreciation of subsidiary coinage. ..	24,269.49	19,639.47
Percentage of loss by depreciation of subsidiary coinage.	24.38	23.50

	Three months ended Mar. 31, 1914 $	Three months ended Mar. 31, 1913. $
Effective receipts	237,638.63	201,794.00
Passengers carried	12,449,793	9,992,856
Car miles run	762,890	648,747
Loss by depreciation of subsidiary coinage ..	68,380.59	53,464.22
Percentage of loss by depreciation of subsidiary coinage	23.64	22.31

Week ended April 8,

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,968.38	16,498.28
Passengers carried	1,012,456	825,361
Car miles run	61,654	49,840

The loss by depreciation of subsidiary coinage for the week was $5,724.28 equal to 24.50 per cent. of the gross cash collected on the cars as compared with $4,635.67 equal to 23.24 per cent. for the corresponding week last year.

Week ended April 15.

	1914. $	1913. $
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	20,621.51	17,203.86
Passengers carried	1,093,636	847,762
Car miles run	63,424	51,766

The loss by depreciation of subsidiary coinage for the week was $6,255.49 equal to 24.48 per cent. of the gross cash collected on the cars compared with $4,856.64 equal to 23.28 per cent. for the corresponding week last year.

Kyushu Electric Tramway Co (Japan).—It is reported that the Kyushu Electric Tramway Company has decided to double the capital of the company, which then will be 6,300,000 *yen*.

The new shares representing the augmented capital will be issued to the original shareholders at the rate of one to every one old share.

SHIPBUILDING

Hongkong and Whampoa Dock Co.—An important shipbuilding contract has just been signed under which the Hongkong and Whampoa Dock Company are to build for the Nord Deutscher Lloyd a first class steamer for the China coast trade, says the *Hongkong Telegraph*. The steamer which is to be built to the rules of the Germanischer Lloyd has the following dimensions:

Length overall	250 ft.
Breadth	38 ft.
Depth	17 ft.
Speed	12 knots

The accommodation for the first and second-class with be of quite an up-to-date nature and will follow the lines set out in the mail steamers of the Company. In the dining room the old system of the one long table will be done away with and the new restaurant fashion with small tables, seating four at a time, will be installed. Large windows with patent brass frames will be a feature of the dining saloon, with double doors and all the latest methods of ensuring a cool breeze. The state rooms have been designed with the idea of securing the greatest possible space in each compartment, fitted throughout with electric light and fans which may be controlled from the berths or the settee.

The second class cabins will be situated aft and will follow the lines of the first-class, while the third-class and deck passengers will be carried on the top deck.

Cooking for the various classes of passengers will be carried out in European, Chinese, and Malay galleys.

The vessel being primarily a mail carrier, dead weight has given place to draught and in consequence of this the cargo carried will not exceed one thousand tons, to deal with which powerful steam winches and a twenty ton derrick will be installed. The latter is to deal with the heavy machinery that is now being imported into China and Malaya.

After the twentieth year (1934) it can effect amortization without any premium.

Additional amortization will be effected by supplementary drawings, which will take place at the same time as the ordinary drawings.

Drawn Bonds will bear no further interest from the date on which they are repayable.

Bonds which are not presented for redemption within thirty years from the date on which they are repayable, will become the property of the Chinese Government.

Appended to the prospectus is a letter from the French Minister of Foreign Affairs to the Banque Industrielle notifying the latter of the receipt from the Chinese Minister in Paris of an official notification of the securities set aside for the service of the new loan.

INSURANCE

Venus Life Insurance Co., Ltd, (Shanghai).—On April 2 this company was inaugurated at 6 A, Hongkong Road, Shanghai. The company has a capital of $1,000,000, of which a quarter is paid up. Mr. Tang Shao-yi is chairman of the board of directors, the vice-chairman is Mr. Lu Sing, and the others are Dr. Wu Ting-fang, Lord Li Ching-fang, Messrs. Yang Tcheng, Tang Wên-sze, Zao Wen-chang, Wong King-fang, Wen Tsung-yao, Ting Pao-chi, Li Mer-tsi, Sung Zong-ying, Pang Kuong-ying, Yi Tseu-chien, managing director, and Chang Bing-foo, sub-managing director. Mr. J. Trevor Smith has been appointed inspector of agents.

While the company has been incorporated in Peking, it is the intention to have it likewise registered in Hongkong. Everything, it is the intention, will be conducted on foreign lines, and policies will be printed both in Chinese and English.

MINING

Kailan Mining Administration. — The total output of the Administration's mines for the week ended February 21, amounted to 49,906.11 tons and the sales during the same period to 54,831.13 tons.

Week ended February 28, output 54,992.86 tons, sales 60,206.31 tons.

Week ended March 7, output, 56,252.50 tons, sales 50,361.92 tons.

Week ended March 14, output, 60,891.88 tons, sales 49,606.18 tons.

Week ended March 21, output 60,096.32 tons, sales 65,024.66 tons.

Week ended March 28, output 60,950.81 tons, sales 59,144.46 tons.

Australian Dredges For Malaya.—The contract for the construction and erection of two large bucket dredges—at a total cost of £40,000—for equipping the property of the Kampong Kauranting Tin Dredging Company, in the Malay States, a concern managed from Sydney, has been placed in Melbourne. The specifications and design are the work of Mr. J. S. Henry, and the dredges contracted for will, it is officially stated, be easily the largest ever built in Australia. The material and workmanship will be as far as possible Australian. The latest improvements found necessary as a result of tin dredging experience in Malaya, including the most recent type of revolving screen, will be fitted in these dredges. Large tin saving tables are another feature—the pontoon being specially large—viz. 130 ft. by 44ft. by 8½ft. deep to carry them. The dredges will be fitted with close connected 6ft. buckets, which will have a theoretical capacity of 35,000 yards per week for each dredge, and effective capacity of 20,000 to 25,000 yards of tin-bearing material per week. The plant specified is designed to dredge 45 ft. below water level. The main engine is of 120 brake h.p., and the pump installed for sluicing has a delivery of 6,000 gallons of water per minute. The cost of the two dredges erected and in good going order on the mine, together with the spares, tools, tin dressing sheds and buildings, will exceed £40,000. The total weight of the dredges, with machinery, will be over 625 tons, which is considerably over 100 tons heavier than the largest dredge yet sent from Australia to the East. The contract time for delivery for the first dredge is eight months, and for the second eleven months from the date of signing the contract.

Malaguit Dredging Co.—This company's new five-foot bucket dredge has begun operations in the Paracale mining district under the supervision of Mr. J. A. Bruce.

Gold Ore Refinery for Chosen.—The *Seoul Press* reports that Mr. Fusano Hisahara, a Japanese capitalist, intends to establish a gold ore refinery at Pyongyang, Chosen (Korea) for the treatment of low grade ore. A similar enterprise maintained by the owners of the Hidachi Mine is in a promising state, and it is expected that should the refinery of Mr. Hisahara be established, the mining interests in Chosen will profit greatly by it in view of the fact that both Japanese and Korean miners on account of comparatively small capital are wasting by no means inconsiderable quantities of gold through the adoption of crude refining methods.

China's Coal Oil Deposits.—According to a report by Hsiung Hsi-ling there are twenty-three coal oil deposits in the Province of Chihli, seventeen in Yunnan, thirteen in Kueichou, eight in Shensi, five each in Kiangsu and Kwangsi, four each in Shansi, Hunan and Fengtien, three in Szechuan, two each in Kirin and Hupeh, and one in Kwangtung, a total of 91.

Seoul Mining Company.—The final dividend of the Seoul Mining Co., for 1913, which was distributed on April 30, 1913, was a further 25 per cent. This makes a total of 50 per cent. for the year.

PERSONAL

The selection of Mr. A. G. Cox, M. I. C. E., as Engineer-in-Chief of the British section of the Hukuang Railways (the section between Wuchang and the Kwangtung frontier) is an eminently desirable one in every way. Mr. Cox has the longest service of any engineer on Chinese railways, and practically twenty years of it have been spent with the Peking-Mukden line, where he has held the position of Deputy Engineer-in-Chief for some years. Mr. Cox, takes with him to his new post a complete knowledge of conditions, great capability, and a reputation for integrity and uprightness which is respected by Chinese and foreigners alike. The aim of Mr. Cox will be to build a railway efficiently and economically, and it will be regrettable if he is in any way obstructed in this desire. Mr. Cox has taken up his duties, having relieved Mr. Collinson, the former Engineer-in-Chief, who has left the service of the Chinese Government.

Mr. A. W. U. Pope, C. I. E., has retired from the service of the Chinese Government.

Mr. Harry T. Edwards has been appointed chief of the Philippines Bureau of Agriculture.

Mr. J. W. Gallagher returned from America in April and resumed charge of the office of the United States Steel Products Company in Shanghai. During his absence Mr. W. H. Dietrich was in charge.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS
DEPARTMENT OF FINANCE AND JUSTICE
BUREAU OF CUSTOMS, MANILA

Bids will be received by the Insular Collector of Customs, Manila, P. I., until twelve o'clock noon, July 1, 1914, for the following vessels:

1. The Cutters **"Busuanga," "Tablas," "Palawan," "Luzon," "Panay," "Mindanao," "Mindoro," and "Negros."**
   These cutters have a gross tonnage of 411.11, length 148 feet, are single screw composite seagoing steam vessels, speed 10½ knots, I. H. P. 500.
2. The twin screw steam vessel **Scout,** gross tonnage 301.33, length 136 feet.
3. The seagoing launch **Sora,** gross tonnage 51, length 90 feet.
4. The seagoing launch **Skua,** gross tonnage 51.13, length 83 feet, 5 inches.
5. The steam launch **Guy Howard,** length 77 feet.
6. One Mullens' auto boat, length 26 feet. Four cylinder Mullens' engine rated at 40 H. P.
7. The gasoline launch **Merlin,** gross tonnage 16.58, length 57 feet, 100 H. P. Speedway engine.
8. Launch No. 3, gross tonnage 17, length 51 feet.
9. The steam launch **Tagalog,** gross tonnage 6.02, length 36 feet. Navy Type cockpit launch.
10. Two ketches, gross tonnage 46.14, length 65 feet, equipped with auxiliary power 45 H. P. Meitz & Weiss kerosene engines, ketch rigged.

Bids must be accompanied by ten per cent. of the sum thereof in the form of cash or an accepted check. The right is reserved to reject any and all bids.

Specifications may be obtained and blue-prints examined at the office of the Inspector of Hulls and Boilers, Manila Customs House, at the American Consulates in Shanghai, Amoy and Hongkong, China; Singapore, S.S.; and Melbourne and Sydney, Australia.

B. HERSTEIN,
Insular Collector of Customs.

Extension of Existing Lines.—The Imperial Japanese Railway Board has decided to investigate with a view to extending the railways, 303 miles in various parts of the country during the current year.

The following is the program the Railway Board has decided to undertake;

	Miles
IN THE NORTH-EASTERN DISTRICTS	
Between Omagari and Morioka	47
Between Yamagata and Tazawa by way of Sawukawa and Etami	19
Between Noheji and Ominato	38
Between Kawabe and Kizukuri	17
IN THE SAN-IN DISTRICTS	
Between Tottori and Chizu...	20
Between Yonago and Neame	19
IN SHIKOKU	
Between Yamada, Kochi and Susaki... ...	24
IN HOKKAIDO	
Between Uda and Rumoe	9
Between Otokoshi and Futaneuchi	87
NEAR TOKYO	
Between Katsuta and Omiya	13

New Rolling Stock.—The new rolling stock to be constructed by the Imperial Japanese Government Railways during the current fiscal year comprises 109 locomotives, 94 tenders, 207 passenger cars, and 1,693 goods cars.

New Light Railways.—On May 4, charters were granted by the Imperial Japanese Railway Board to four railway companies for the construction of light railways in Chiba-ken and Okayama-ken. The first of these companies, the Katori Railway Company, proposes to lay a steam light railway, gauge 3.6 feet, between Omigawa and Sawara, important commerical centres in Chiba prefecture. The proposed line is 7 miles 30 chains in length and costs 330,000 *yen*. The second is the Hokuso railway company which proposes to construct a light railway, gauge 3.6 feet, in the same prefecture, with a capital of a million *yen*. The proposed line, twenty miles in length, connecting Kinoshita with Urayasu, runs through Chiba prefecture crosswise. The Tobi Light Railway Company, promoted by the Okayama businessmen, will be a steam light railway, gauge 3.6 feet, between Imbe and Toyomura in Okayama prefecture. The projected line will be 11 miles in length and is said to cost 380,000 *yen*. The new line projected by the last of the four companies, the Ushimado Light Railway Company, starts at the terminus of the above-mentioned railway and terminates at Ushimado, Oku-gun, Okayama-ken, being 8 miles 60 chains in length. The construction expenses are estimated at 370,000 *yen*.

MANCHURIA

Feeders for the South Manchuria Railway.—Details concerning the Sino-Japanese agreement *re* the five railways in project in Manchuria and Mongolia are progressing fairly, reports the *Manchuria Daily News*, and continues:—The construction funds amounting to Y30,000,000 are to be raised in European markets.

Traffic Earnings of Changchun Station.—During the year October, 1912, to September, 1913, the arrival of beans at the railway station at Changchun totalled 234,868 tons. During the half-year from October, 1913, to last March, the total arrivals reached 158,718 tons, and a further arrival of 28,410 tons is expected for the remaining half-year ending next September. Calculating on this basis, a falling-off by 47,740 tons will be noted against the present season. The railway traffic receipts at that Station have, however, been nearly as the previous season. From April, 1913, to last March, the total earnings reached Y. 2,552,867 as against Y. 2,556,610 for the preceding fiscal year, the difference in favour of the latter being only Y. 3,743.

South Manchuria Railway Co.—The traffic returns for the month of April gave a daily average of Y62,784, being a decrease from the corresponding month of last year by Y1,909.

THE PHILIPPINES

Operations in 1913.—The following is from the annual report of the Governor-General of the Philippines, under date September 25, 1913:—The program of railroad construction on the island of Luzon by the Manila Railroad Co. has been steadily carried out during the year. The construction of the lines of the Philippine Railway Co. on the islands of Panay and Cebu was practically completed during the fiscal year 1911, but the disposition of certain outstanding minor items caused the final closing of the accounts to be delayed, and to be still unaccomplished at the end of the fiscal year 1913. On August 9, 1913, however, a final bond issue was made, and the matter definitely settled. Since no action has been taken by the Legislature on the proposal to relieve the Company from the obligation to construct a line on the island of Negros, the Governor-General, on June 24, 1913, authorized the extension of time for its completion "until such time, as the Legislature shall have acted on the matter, or until such time as both parties to the contract shall desire its fulfillment."

On the northern lines of the Manila Railroad Co., the bonds of which are not guaranteed by the government, there were completed during the year 33.5 kilometers of grading, while 27 kilometers of track were laid and 13.3 kilometers were put in operation. On the southern lines, the bonds of which are guaranteed, 86 kilometers of grading were completed, 60.5 kilometers of track were laid, and 22 kilometers were put in operation. The total length of line put in operation was 35.4 kilometers. In the course of the year the main line north of Dagupan was declared in full commercial operation as far as South Bauang. The grading on the Baguio line was opened up for practically its entire length, while one of the necessary tunnels was nearly completed and the other well advanced; it is expected that this line will be finished by the beginning of the calendar year 1915.

Early in the fiscal year the bond section extending from Magdalena to Pagsanjan in Laguna Province was put in full commercial operation, thus completing the construction of that branch; and authority was granted, effective February 10, 1913, for the operation of the bond section from Tiaong to Lucena on the main line south. Work has been pushed steadily on the portion of the line beyond Lucena, which is to establish the first through land communication between Manila and the rich hemp-producing provinces of southern Luzon. This has been definitely located, subject to minor changes during construction, for nearly its entire length. At the end of the year the track laid came within 5 kilometers of the average necessary to complete the line, as authorized by Acts. Nos. 1510 and 1905, on September 12, 1918. In all, of the 1,312 kilometers authorized by law the Manila Railroad Co. had constructed at the end of the fiscal year 829 kilometers, of which 761 were in operation, leaving 483 to be constructed. Of this last much the greater part, 417 kilometers, pertain to the southern or guaranteed lines.

The lines of the Manila Railroad Co. were operated with success throughout the year: there were no heavy floods and the track was maintained in good condition for all lines. The company reports an increase in operating revenue for the calendar year 1912 as compared with the preceding year of 56 per cent., while the figures for the first six months of the current year promise a further heavy increase. The Philippine Railway Co. was less fortunate. The islands of Panay and Cebu were visited by severe typhoons, causing considerable damage to the track and bridges of the company and to the agricultural products that compose most of the freight; the traffic in consequence was adversely affected, and the operating revenue fell considerably below that of the preceding year.

Japan

CHOSEN (KOREA)

The Seoul-Wonsan Railway.—Along with the advent of spring, activity is shown with regard to schemes of railway construction in Korea. Work on the unfinished section of the Seoul-Wonsan railway has made more progress than originally expected. Over the entire line, except the section between Sijin and Kosan, 16 miles in length, where the work has met with most difficulty, construction cars are being run from both ends. Construction of dykes along the above section has been almost entirely finished, and 14 tunnels have also been successfully bored, the only portion of work unfinished being that on the interior of the tunnels. Progress has also been shown with regard to the construction of railway bridges, more than 20 in number, and it is expected that at this rate work on the entire line will be finished by the end of August next, and that traffic will be begun the following month.

The Chongjin-Hoiryong Railway.—The survey of the route of the projected Chongjin-Hoiryong railway and of an extension of the Seoul-Wonsan railway has already been begun by three surveying corps, each consisting of about 15 experts. One party is engaged in the survey of the route of the extension of the Seoul-Wonsan line and the two other corps are surveying that of the Chongjin-Hoiryong line. It is expected that the work will be entirely finished by the end of August next. Purchase of the land required will then be begun, and the laying of the rails will be set about early next spring.

GENERAL

Verkne-Udinsk to Kiakhta Line.—It is stated that the Russian Government has definitely decided to construct the railway from Verkne-Udinsk to Kiakhta. The cost of the line it is estimated will amount to about 23,740,000 roubles. Russia has long desired to build a branch of the trans-Siberian line via Kiakhta and Urga to Kalgan, and this is a tentative beginning.

COMPANIES

China Industrial Co.—The Chugoku Kogyo Kaisha or China Industrial Company, held its first ordinary general meeting of shareholders in the Tokyo Chamber of Commerce recently. Mr. Kurachi, the vice-President of the company, presided. Twenty-four shareholders, representing all the shares of the company, were present, including Mr. Nakano, Baron Shibusawa, Mr. Ohashi, Mr. Sun Po-shen, Mr. Chou Chin-piao, Mr. Li Shih-wei, Mr. Hu Tsung-ying, and Mr. Yang Shih Chi.

The chairman presented a report on the proceedings for the term just closed. In part he stated that during the term the company was occupied with the affairs relating to the inauguration of the company and did not set to real work. However, applications for loans to the number of nineteen were received from

RAILWAY DEVELOPMENT IN SHANTUNG

A correspondent at Hsuchowfu writes to a contemporary as follows:—The chief items of interest in North Kiangsu at present are economic rather than political. It is hardly too much to say that even the great Lung Hai Railroad, stretching from Lanchowfu to tidewater, is eclipsed in importance by the new line to be built from some point west of Tsingtao, via Ichowfu, and terminating at this place.

It may not be clear how such a short line appears of more importance to this part of the province than the line that cuts straight across North China, with its infinite political possibilities: for the wise ones have pointed out that the Lung Hai is but the emergence of a great eastern-bound current that was dammed up effectually at Port Arthur and could not find sufficient space for dischange in the colder port farther north. But it is of far more importance to the short-sighted people that they should get a few commodities a fraction of a cent cheaper to-day than that the vitals of the nation should be helplessly exposed.

Neither may it be clear how the new road from Tsingtao to North Kiangsu can greatly affect prices, for its length will certainly not be very far from the present distance by rail from here to Shanghai, and in addition must be reckoned the very low freight rates on the Shanghai-Nanking Railway with which no line north of the river is likely to compete. But whatever may be the reason the trend of trade towards Tsingtao cannot be denied. It may be mentioned that one commodity has in the last few months established itself as almost a monopoly, although it has to pay freight over two hundred and fifty miles of the Shantung Railway and two hundred miles more over the Tientsin-Pukow line from Tsinan, and we are practically half way between the Yangtse and Tsinan. Shipments of the some commodity were just a little while ago entirely from the south, but they have practically ceased.

It is one of the failings of humanity to exaggerate the importance of one's own town, but making a liberal discount for such civic pride it cannot be denied that the possibilities of development here are tremendous. Already through the junction of the Tientsin-Pukow Railway and the Lung Hai, its importance has been increased by the change in the plans of the above mentioned new line from Tsingtao.

It will be recalled that the first plans made the terminus at the village of Hanchuang, just inside the Shantung border, from which place their trains would run into Hsuchowfu over the Tientsin-Pukow tracks. We understand that these plans have been materially modified and that the route will be direct from here to Ichowfu, which will put 30 miles of the road in the province of Kiangsu. For several years at least this city will be the eastern terminus of the Lung Hai. We hear that the officials of this road hope to have rails laid from Hsuchowfu by September but as they have, at this end of the line, neither rails nor cross ties that hope seems a little premature.

Steady efforts are being made to improve transportation on the Tientsin-Pukow Railway. A foreign traffic inspector is located here and a foreign conductor has been put on one of the regular trains.

An honour has been conferred on Mr. L. P. Ridgway by the Chinese Government in recognition of his services during the rebellion of last year. As District Engineer he had a very trying position as the opposing armies went back and forth over his section of the line inflicting no end of damage. President Yuan has conferred upon him the Chiaho decoration of the seventh class, an honour richly deserved. Mr. Ridgway has been on the railway from the start, stationed first near Pukow, later at Kuchen, where he built one of the important bridges, while now he is in charge of the line from the Shantung border south to Nanhsuchow.

Attention is directed to the new time table for the Tientsin-Pukow Railway which appears in our advertising columns. The express train will leave Tientsin each Saturday at 7.30 p.m. and will arrive at Pukow at 9.04 p.m. on Monday, while from Pukow the express will leave at 9.10 p.m. each Monday night and will reach Tientsin at 10.55 p.m. on Wednesday.

FREIGHT CHARGES IN AMERICA AND JAPAN

WITH LOWER COSTS JAPANESE ROADS GET HIGHER RATES

The American Bureau of Railway News and Statistics has issued the following:

"Although their railways pay the highest wages in the world and must face correspondingly higher prices for materials than are borne by any other transportation system, the American shippers to-day are paying a smaller bill to have freight transported than the shipper in Japan, whose railway, operated by the government, bears nearly, if not quite, the smallest burden in wages or costs of materials in the world. This striking showing of comparative economy is based upon the latest report of the Imperial government railways of Japan. The railroad system paying the highest labor costs of operation in the world, in other words, is selling its commodity, transportation, at a smaller price than is the most cheaply operated system on the globe.

"How little the question of cost burdens the Japanese railways may be learned from the fact that in the fiscal year ended March 31, 1912, it cost only $46 out of every $100 taken in to operate the system. In the corresponding fiscal year American railways paid in operating expenses a few cents under $70 for every $100 earned in gross. The difference in wages alone is almost enough to explain the discrepancy, for whereas American railways yearly pay out in wages more than $44 for every $100 earned, Japan's railways pay only $23, and whereas almost 64 per cent. of all operating expenses on American roads represents wages, less than 51 per cent. represents wages in Japan.

"In the face of this huge advantage the average rate per ton mile charged shippers on Japanese railroads is 0.83 cent against 0.74 cent on our own railroads. Yet the Japanese rate, unlike our own, does not cover terminal service. For this service a charge of 11.3 cents per ton is made, which, added to the road charge gives a total rate of 0.97 cent per ton mile against our own 0.74 cent.

"Although Japan affords a passenger rate of .69 cent per mile against our own 1.98 cent, the difference is almost wiped out by comparison of the traffic, for 95 per cent. of travellers on Japanese railroads are third class; only 4.7 per cent. use second class accommodations and three-tenths of one per cent. use first-class. Whereas this small number of first-class passengers pays 1.60 cents per mile, almost as much as our own, the third-class, in accommodations which would not be tolerated in this country, pays only 0.65 cent, which accounts for the low general average.

"Why the Japanese wage bill is so low may be judged from the fact that the highest paid officials, vice-president and engineer-in-chief, receive $200 a month. The average for officials of the higher grade is $166 per month and for officials of the lower grade $68 per month. Clerks receive an average monthly salary of $21, assistant engineers $26, general employees $9.70 and laborers in regular employ only $7.47. For all employees the average is only $112.50 per year against almost $750 yearly on American roads.

"Another reason why Japanese railroads have kept expenses so low is that immense amounts which on our own railroads must be met by operating expenses, there are charged to capital. The effect is seen in the capitalization figures, for whereas the cost per mile in 1908, just after nationalization, was only $47,759, by 1912 it had risen to $88,104, almost doubling the figures prevailing when the state took over the roads. Japan's railways to-day are capitalized at some $25,000 more per mile than those of the United States, frequently accused of over-capitalization."

The dry dock which is being constructed on Hikoshima, Shimonoseki Straits, by the Mitsu Bishi Company will be completed by November of this year. It will be 350 feet in length, 29 feet in depth, and 56 feet wide at the bottom, says the *Nagasaki Press*.

the prospect of accomplishing this seemed almost hopeless at one time, it now only depends upon the genuineness of the desire expressed by those in high places to tread the path of prudence. The recuperative power of the country is shown by the Customs returns and by the increased revenue from salt dues and other sources. Honest administration for a few years would place China in a position in which she would be independent of foreign financial assistance except for works of a reproductive character. One of the most gratifying signs that matters have greatly improved is the announcement that, instead of borrowing £25,000,000 for reorganization purposes, it is not likely that China will require more than £7,5000,000 during 1914. This sum is required to pay off the numerous short term loans which from every point of view were better wiped off the slate. Situated as China has been, short term loans cannot be met when they fall due, and this means renewal on onerous terms. With all loans of this description finally disposed of China's credit will be greatly strengthened.

All friends of China will hope she will avoid the danger of wearying of good doing. If, now things are showing marked improvement and the outlook is fairer than it has been at any time during the past two years, she were to recommence the bad old practice of obtaining money for unspecified purposes in return for orders for armaments, or by other means which are opposed to sound finance, she would be in a worse position than ever. In times of stress desperate expedients may appear necessary, though they cannot be justified, and bearing this in mind less condemnation has been visited upon China for the indiscreet Belgian Loan of 1912, the Crisp Loan, the Austrian Armament Loans, etc. than may have been inerited. But the present is not a time of stress and it would be simply deplorable if the tender plant of China's credit after putting out a few tentative sprouts were to be nipped by the frost of freebooting finance. That this will not be so is the belief of those who have trust in the Administration as now constituted.

THE SALT GABELLE.

Sir Richard Dane, Co-Director of the Salt Inspectorate, may well be optimistic about the future, in view of the sum of Tls. 24,000,000 having been obtained from the salt collectorates during the year ended May 20. The service of all the loans secured upon the salt revenue only requires the sum of $16,250,000. When the reorganization scheme now being perfected by the Directors of the Salt Inspectorate is in operation, and conditions in the country regain the normal, it may be expected that a much larger revenue will be available. Some idea of the magnitude of the opportunity that is offered to augment the revenue while actually decreasing the burden upon the consumer, is supplied by the announcement by Sir Richard Dane that the salt merchants procure salt at Tongku at a cost of one cash per catty and retail it in Tientsin at 48 cents and in Peking at 58 cents per catty. This statement, which assuredly would not have been made had not Sir Richard Dane been absolutely sure of his figures, shows that, were there no other considerations to be taken into account, it would be greatly to the public advantage were the Government to eliminate the middleman altogether. That would be probably an innovation of too radical a character, but it is obvious that both Government and people have every justification for a demand to share in the harvest hitherto reaped by the merchants.

Some months ago Sir Richard Dane is said to have declared that he saw no reason to suppose that salt in China would not produce a revenue of six million sterling annually. This would seem to be a very conservative estimate. For several months last year the country was in the throes of rebellion, and when the rebels were suppressed bandits in several of the provinces prevented the restoration of order. Moreover the reorganization of the Salt Gabelle can hardly be said to have been begun, as the regulations were only promulgated in February last. Notwithstanding, the revenue for the past year paid into the Quintuple Banks has exceeded three million sterling. The estimate of $77,000,000 for the financial year 1913-14 may quite possibly be realized.

THE CHEFOO RAILWAY AND BREAKWATER PROJECTS

Within recent months much has been said regarding the proposed railway to connect Chefoo with the Hinterland of Shantung Province, and the breakwater to make Chefoo a harbour capable of mooring seagoing steamers and permitting them to embark and discharge cargo in all kinds of weather. Unfortunately the interests of various parties differ in so far as the creation of a port at Chefoo is concerned, and added to that the apparent disregard by the Chinese of their own possessions has obstructed any final plans being arrived at for the proper developments of the port. In so far as the Railway is concerned the *Chefoo Morning Post* recently set out the vicissitudes of the project, summarising them as follows:—

"1.—As a commercial undertaking; route from Chefoo to Weihsien.

The prospectus stated that, owing to the reluctance on the part of the Gentry to give their active support to an enterprise unfamiliar to the interior it was proposed to construct a line first to Hwanghsien with a capital of two million dollars.

The twenty promoters were each to guarantee the sum of fifty thousand dollars, making a total sum of one million, the remaining million being open to subscription by firms of good standing. Upon the enlargement of the capital the line would be extended to Weihsien as the terminus.

2.—Conversion to Government enterprise.

Certain representations were made to the Board of Commerce from time to time, but owing to depression in trade in the beginning of 1910 the promised financial support could no longer be relied upon, and finally in September of the same year at a meeting of the Chinese Chamber of Commerce, it was agreed to prepare a Memorandum to the Governor of Shantung (Mr. Sun Pao-chi) declaring the inability of the Chefoo merchants to finance the proposed Chefoo railway.

Action in this respect appears to have been delayed till May 1911 when the Chinese Chamber of Commerce made a representation to the Taotai praying, owing to adverse circumstances, for the conversion of the project from a commercial enterprise to a Government undertaking. Further progress was arrested by the Revolution in October 1911 and it was not till September, 1912, that consideration of the subject was revived at a public meeting convened by General Chu Tung-feng, the Administrator, when a provisional committee of Ways and Means was formed composed of twenty-six influential members of the Chinese Mercantile community. It was then advocated that the line be constructed from Chefoo to Hwanghsien, thence to a point between Chang-E and Weihsien, and from there on to Te-chow, a point on the Tientsin-Pukow trunk line, as such a route would not interfere with the German Railway in Shantung and would enable Chefoo to communicate with all parts of China and Europe. A summary of the proceedings was communicated by telegraph to Peking and Tsinanfu. A reply was received from Tsinanfu to the effect that the Tutuh and the Provincial Assembly had endorsed the scheme in a telegram to the Board of Communications.

Later, a telegraphic reply was received from the Board of Communications at Peking pointing out that the proposed line from Chefoo to Te-chow would necessitate the bridging of the Yellow River, thus entailing considerable expense, and the Board therefore advised that some other route be carefully considered and reported upon.

In consequence thereof in the early Spring of 1913, a survey of the Chefoo-Weihsien route was made by Chinese engineers. A plan based thereon was submitted to Peking in due course, which brought forth a response in the form of a despatch dated August 1913 to the Chinese Chamber of Commerce at Chefoo wherein the necessity for the construction of the line was admitted and the Government's obligation in this respect was recognised. Consideration, therefore, as a commercial undertaking need no longer be entertained.

3.—Interdependency of Railway and Breakwater.

Matters then remained in abeyance until the formation of the Chefoo Breakwater Commission which accentuated the

urgent necessity for the railway enterprise and marked the interdependency of the projects. This situation was so fully recognised that it introduced concerted action on the part of the Chinese and foreign mercantile communities finding expression in memorials to Peking in the latter part of April 1914.

Like Tantalus, who stood up to his neck in water, which fled when he tried to drink of it; and over his head hung fruits which the wind wafted away whenever he tried to grasp them, it is now with infinite relief that we greet the news that as a result of the memorials and the patriotic activity of the Kwan Ch'a Shih, Mr. Wu, the engineer deputed by the Chinese Government to make a survey of the route, actually commenced his start from Weihsien on the 1st May and is expected at Chefoo on or about the 1st of June next."

THE BREAKWATER

In the Spring of last year the Chief Harbour Improvement Commission was formed under authority of the Central Government and the Diplomatic Body and the scheme of surtaxes was arranged which came into force on July 1st last. On October 27th Mr. O. C. V. A. van Lidth de Jude, a Dutch engineer, accompanied by an assistant engineer, Mr. B. van Exter, arrived in Chefoo, having been appointed by the Commission to devise a scheme and draw plans for the improvement of the Harbour.

The Engineer had to keep in mind the necessity for the construction of several wharves, capable of accommodating two or three steamers and connected with the shore by rail, and to provide sufficient deep anchorage for the accommodation of large ocean going steamers. The engineers made a very close study of the port and its requirements. They discovered during the boring operations that the bottom of the harbour was covered with a deposit of mud from 9 to 34 feet deep and this discovery has compelled a revision of the original ideas of cost of the work.

Before the engineers were appointed it was estimated that Tls. 1,500,000 would be sufficient to cover the cost of the work but the extra dredging and other costs arrived at by the engineers brought their calculations of cost to a minimum of Tls. 3,000,000 —just double the amount originally arrived at. With this amount the engineers estimate that they will be able to devise a port which will give facilities to shipping sufficient to enable it to hold its own with Dairen or Tsingtau. They propose that the improvement work shall consist of a wall on the east running from near the base of Consular Hill due North and overlapping the end of the other wall running from the West Beach in a north-easterly direction. The Breakwater on the east will be the one encountering the force of heavy seas and therefore will, of necessity, have to be built much stronger than the one running north-east.

The fact that the cost has been doubled has caused a certain amount of perturbation among the advocates of the improvement of the Harbour, but the amount is far from excessive if Chefoo—which is the only purely Chinese port on the coast between Shanghai and Tientsin—is to hold its own with those ports which are in foreign hands and which are its chief competitors.

"THE CHINESE REVIEW"

We have received the first number of "THE CHINESE REVIEW," edited by Mr. J. Wong-Quincey, B.A., and Mr. Chih San-chen. The Review is published monthly in London and the desire of the editors is to give expression to Chinese opinion, from the oriental standpoint on questions of moment and interest. That the new publication will supply a real want is the view expressed by Professor H. A. Giles, Viscount Bryce, the Rev. Lord William Gascoyne Cecil, Professor Jeremiah W. Jenks and others, whose letters of commendation and encouragement are published in the first number. An article by Mr. Wong-Quincey on "The Eclipse of Young China" will be read with interest. He adopts the view that foreign countries can best show their sympathy for China in the crisis through which she is passing by letting her alone. Young China, he points out, made the fatal error of miscalculating the strength of the conservative spirit of the Chinese as a people, a mistake it may be mentioned in passing, that was not made by impartial and unprejudiced foreigners who knew their China. To them it was evident from the first that Young China was going too far and too fast. Mr. Wong-Quincey pays a deserved tribute to the minority, which coupled enthusiasm for reform with recognition of the necessity of bearing in mind the character of the people. In his opinion the question of the constitution is not so important as the creation of a new spirit to elevate the whole nation.

Articles are contributed by Mr. H. Wilson Harris, M.A.; Mr. Ku Hung-ming, M.A., Mrs. Little and others.

JAPAN IN CHINA

The *London and China Express* of May 8, has the following:—

The Peking correspondent of a London morning contemporary remarks that by obtaining the contract for the Nanking-Hunan Railway and its projected branches, the British not only head off the Japanese—who have been endeavouring to secure the right to construct a railway from Fukien to Changsha, with a branch to the Yangtsze—but insure British control of all railways of real importance in the large triangle whose points are marked by Canton, Hankow, and Shanghai. It is understood that the Japanese Government was plainly told that the British Government would not permit Japanese to build a railway beyond Nanchang, from Fukien. Moreover, the Kiangsu section of the Shanghai-Ningpo Railway, which was mortgaged to Japanese during the Revolution, has been redeemed with capital supplied by the British and Chinese Corporation, and it is regarded as merely a matter of time before the rest of this line comes under British control. British financiers, says the correspondent, may be pardoned for viewing Japanese railway schemes in China unsympathetically. In the first place, though this is always difficult to prove, it can scarcely be doubted that Chinese railways constructed under Japanese supervision and management do not afford fair treatment to the freight of other nations. In the second place, it has not been forgotten that with the loans raised in London for the South Manchurian Railway, the Japanese purchased locomotives and rolling stock from the United States. As Japan cannot undertake the construction, upon a large scale, of any railway in China without recourse to the London market, the British Government, adds the correspondent, can reasonably veto any Japanese railway projects which encroach upon the British spheres of influence. It is noteworthy that in foreign circles the frustration of Japanese railway ambitions in the Yangtsze Valley is generally welcomed.

The longest stretch of railway in the world without a curve is said to be in New Zealand, where there is a distance of 136 miles in a perfectly straight line. This fact is remarkable when it is taken into consideration that New Zealand is one of the most difficult countries in the world for railway construction, as it is very mountainous, necessitating sharp curves and very heavy grades.

In recent experiments on the Pennsylvania Railway it is stated that a twelve-car steel train nearly 1000 tons in weight, running 60 miles an hour, was stopped within its own length of about 1000ft. by means of a development of the Westinghouse brake. Besides improvements in the brake mechanism, two shoes are employed for each wheel instead of one, as at present. The new apparatus shortens the time of obtaining the maximum brake capacity from eight seconds in the present system to three and a-half seconds. With electric control, the time is shortened to two and a-quarter seconds. It is also stated that a twelve-car steel train running 80 miles an hour could be stopped within 2000ft.

THE LUNG-TSING-U-HAI RAILWAY

A RUMORED CHANGE OF PLANS

Considerable interest has been taken in the progress being made in connection with the Lung-Tsing-U-Hai Railway, the Agreement for which was signed on September 24, 1912.* By the terms of this Agreement the Compagnie Générale de Chemins de Fer et de Tramways en Chine was to survey and construct a line which would connect Lanchow-fu, the capital of Kansuh, with a seaport to the north of the Yangtsze. It was generally understood that the seaport was to be Haichow. Previous investigations, however, had shown that it would only be possible to transform Haichow into an efficient port by the expenditure of an immense sum of money. The Compagnie Générale appears to have recognised that the project of carrying the line to Haichow had little to commend it and they are reported to have requested that the terminus of the line should be, instead, at Tungchow on the Yangtsze. It was hardly likely, in view of the fact that this deviation would involve severe competition with the southern section of the Tientsin-Pukow line, that the request would be allowed to pass without protest. The British Minister at Peking is said to have protested formally against the proposed deviation, and there the matter has rested.

A correspondent of the *North-China Daily News*, writing from Hsuchowfu on May 22, makes some interesting statements. He says:—

Those who have followed the developments of railway construction for the past few months will be intensely interested in the report, in which considerable confidence can be placed, that the Lung-Hai engineers, who started east from Hsuchowfu some weeks ago following the survey of several years ago, have been recalled. When it is considered that the plans as understood by the public generally were to push the Lung-Hai straight through to the sea at once, the above report will give rise to many questions.

As the only ones who really know are not likely to impart any information on the subject we are left to the use of our eyes, and the reader is also invited to "look see." It is difficult to avoid the conclusion that British and German influence have given the Lung-Hai plans a serous setback, though it is by no means evident it has been accomplished by joining hands. Looking at it from the standpoint of a disinterested bystander, if the Yangtze Valley's being a British sphere of influence means anything at all, Britain cannot possibly acquiesce in the Lung-Hai reaching tidewater anywhere along the River. Hence the terminus of the Lung-Hai has never been definitely announced, it being the common view that if shut off from the Yangtze it would swing to the north and emerge at Haichow. Granted that such had been determined upon, the move of the Germans becomes as plain as day.

It will be recalled that the plans as previously announced called for a road from Tsingtao (Kaomi) running due southwest and terminating at Hanchuang, a small hamlet just across the border of Kiangsu and Shantung, putting the whole line in the latter province. The decision announced some time ago in these columns to run the line straight through from Ichowfu to Hsuchowfu, putting about thirty miles in Kiangsu, is evidently the primary cause of the stoppage of the Lung-Hai work to the east. For with a direct line from here to Tsingtao which is already splendidly equipped for handling both exports and imports the line to Haichow is doomed to certain commercial failure. If the interests behind the Lung-Hai are prepared to go down deep into their pockets and draw out the millions of pounds necessary to make Haichow a formidable competitor of either Tsingtao or Shanghai, let them, but there will be a long wait for dividends. Meanwhile the German softly sayeth "Others have laboured, etc."

If the above is a correct guess at the situation, what does it mean for the ambitious Lung-Hai plans?

Anyone deeply interested in the welfare of China will upon mature deliberation very likely come to the conclusion that it is for her best interest that the Lung-Hai should not proceed further eastward than Hsuchowfu. Apart from political possibilities which have been abundantly commented upon elsewhere, the road is an almost incredibly stupid conception, if the Chinese Government has any voice in the railroads whatever. The only competitor it would have is the T. P. R., also a government railway. This brand new road with its spendid construction can handle all the traffic southwards that this generation is likely to see. To build another practically alongside of it is to cripple permanently the revenues of both. The success of the road even from Honanfu to Hsuchowfu, is doubtful as a commercial proposition. If China is able to demand it she should insist that all traffic originating on the Lung-Hai should be carried to its southern destination by the T. P. R.

*The text of this Agreement was published in the FAR EASTERN REVIEW of January, 1913.

OSAKA COTTON TRADE CRISIS

The increase of spindles lately undertaken in Osaka has resulted in an over-production of yarn and this is believed to be the principal cause of the collapse of the yarn market. Yarn merchants and others interested in this business are now going through a painful ordeal, and the consequences are widespread. The coarse yarns of the Kanegafuchi mills have declined to Y100, which is Y3 below the previous lowest rate during the reaction after the activity following the war. The collapse of the coarse yarn market has affected the finer and gassed yarns, and some qualities have suffered a heavy decline of over Y30 on the rate ruling about a month ago. The collapse of the market has struck the yarn merchants a heavy blow, and in Tokyo and Nagoya the failure of one or two is already reported, says the "Japan Chronicle." No failure has so far been reported in Osaka, but disquieting rumours are current, and yarn business is being much interfered with. Business for forward delivery on long terms is entirely suspended, and the greatest precaution is being exercised in business, which is now confined to merchants of the first rank. The difficulty in which the yarn merchants of Osaka find themselves is much accentuated by the precautions taken by banks in dealing with them, and also by the notice given by customers in the interior of the cancellations of orders. They are now placed in the disagreeable position of having to bear the entire loss resulting from the decline in the market. Should a further occur, not a few yarn merchants in Osaka will be forced to go into liquidation.

PETROLEUM IN BURMA

The Indo-Burma Petroleum Co., which has been drilling for petroleum in the upper Chindwin district at Indaw, Kindat Township, has struck oil in three wells. One well is said to have been a "gusher" of 2,000 barrels a day. This is an entirely new field in a wild, sparsely inhabited district. The company is planning to construct a pipe line from Indaw in an easterly direction to the Mu Valley, then turning south along the railway to Myinumu on the Irrawaddy River, not far from Sagaing, opposite Mandalay. The length of the pipe line will be about 170 miles. American pipe will probably be used. Three or four experienced pipe-line men will be needed to act as foremen over gangs of coolies, and one general pipe superintendent will also be wanted. The active development of oil fields in Burma is shown in the fact that the production increased from 116,000,000 gallons in 1904 to 240,500,000 gallons in 1912.

OPERATIONS OF THE CHINESE EASTERN RAILWAY

Prior to the construction of the Chinese Eastern Railway and with the exception of the Ussuri Railway, which runs north and south in the Maritime Province of Russia in Asia and connects Vladivostock and Khabarofsk, the Russian railways did not extend farther east than the Trans-Baikal Railway, writes Mr. Lester Maynard, American Consul at Harbin. Two projects were under consideration for joining these two lines, so as to place the Russian Far East in direct rail communication with the rest of the Russian Empire. One plan was to build a railway following the Amur River and connecting with the Ussuri Railway at Khabarofsk, and the alternate plan was the present Chinese Eastern Railway. At that time the proposed construction of the Amur Railway was abandoned, not alone because it was over 300 miles longer than the direct line through Manchuria and presented serious engineering difficulties, but also because Russia's policy was territorial extension in the Far East.

CHINESE EASTERN RAILWAY.—A typical station.

BUILT TO ADVANCE RUSSIAN INTERESTS IN MANCHURIA.

The construction of the Chinese Eastern Railway promised to give Russia great commercial advantages in the trade of Manchuria, Mongolia, and North China, and to make Vladivostock the seaport for North Manchuria. Arrangements were made to hand over the administration of the Ussuri Railway to the Chinese Eastern Railway upon the completion of the latter, and an effort was made to divert commerce through Vladivostock, but after the leasing of the Kwangtung Peninsula by Russia a branch line was built from Harbin, which was the administrative center of the Chinese Eastern Railway, to Port Arthur and Dairen (Dainy), and Russia's attention was then devoted to make the former city an impregnable fortress and the latter a great commercial seaport, even at the expense of Vladivostock, which was to remain principally a fortress.

CHINESE EASTERN RAILWAY.—Through the King-Han mountains.

The present site of Harbin was chosen as the headquarters of the railway on account of its location on the Sungari River, as it was recognized that this, the most important river in North Manchuria, would be the means of delivering the greatest amount of freight to the railway. The railway organized a steamship service on the Sungari, and in connection with the steamers of the Russian Volunteer Fleet, a vast network of Russian commercial influence was spread over all of North China and Manchuria.

GROWTH OF TRAFFIC SINCE RUSSO-JAPANESE WAR.

As a result of the Russo-Japanese War, the Chinese Eastern Railway's operations were confined to that part of Manchuria north of Kwangchengtzu, and attention was again directed toward the building of a great commercial seaport at Vladivostock.

The completion of the Amur Railway will undoubtedly seriously affect the operations of the Chinese Eastern Railway, and it will therefore be interesting to review the operations of the railway since the close of the Russo-Japanese War. Prior to the war the railway has not been placed in thorough running order, and its real influence on the commerce of North Manchuria was not clearly demonstrated. During the war it was given over almost entirely to military use, and therefore the following review starts with the year 1906, although normal facilities were not fully established until 1907.

The movement of slow commercial freight in all directions on the Chinese Eastern Railway for the seven years from 1906 to 1912, inclusive, stated in tons of 2,000 pounds was as follows:—1906, 452,395 tons; 1907, 482,228 tons; 1908, 596,490 tons; 1909, 798,343 tons; 1910, 1,032,103 tons; 1911, 1,336,936 tons; and 1912, 1,218,290 tons.

FREIGHT TRAFFIC ANALYZED.

In the earlier years local freight represented almost half of the total freight hauled, but the rapid increase in the exportation of soya beans resulted in a great increase of export freight to the Ussuri Railway; in other words, to Vladivostock for shipment abroad. In 1908 this traffic almost equaled the amount of local freight, and in 1909 the exports to the Ussuri Railway were more than double the amount of local freight. In 1910 the same conditions prevailed, and in 1911 the amount

increased to almost three times that of the local freight. In 1912 the local and export freight to the Ussuri came nearer together, owing to a heavy gain by the former and a decrease in the latter. The other items of export show a steady increase, the most noteworthy being shipments to the South Manchuria Railway. On the other hand, the amount of local freight shows a very slight increase, except in 1912, and in some years, notably in 1909, fell below the first year.

CHINESE EASTERN RAILWAY.—Railway Cars Shops at Harbin.

Import freight from both the Ussuri and Trans-Baikal Railways shows a gradual decrease, and the imports from the South Manchuria Railway a rapid increase up to 1912, indicating that Dairen (Dalny) has been getting the import business of North Manchuria at the expense of Vladivostock. In 1912 the import freight from the Ussuri Railway showed a slight gain, and that from the Trans-Baikal a heavy gain, while the freight from the South Manchuria dropped more than 100,000 tons.

CHINESE EASTERN RAILWAY.—Another typical station.

As in the case of local freight, the transit freight shows but slight change. A general survey of the figures would indicate that although the totals show a gradual and substantial increase in the amount of freight hauled by the railway during the first six years under review, the increases are almost entirely due to the shipments of soya beans, which in 1911 represented about 50 per cent. of the total traffic. In 1912 the exportation of beans was hampered by local disturbances and a weak market.

The figures for 1911 differ slightly from the corresponding figures submitted with the annual report of this consulate for the calendar year 1911. The railway officials state that statistics given at an early date are liable to alteration, and this was the case with the figures supplied in the early part of 1912. The differences, however, are slight, and do not materially change the totals.

The Administration Building at Harbin.

PRINCIPAL ARTICLES CARRIED

The principal articles transported during the last seven years were bags and material for manufacturing, beef, and products of, beef; coal; dry goods, including piece goods; firewood; grain of all kinds, including soya beans; kerosene; lumber and timber, salt; sugar, and tea.

GRAIN AND SOYA BEANS FORM BULK OF FREIGHT

Grain of all kinds and soya beans have been from the beginning of the operation of the Chinese Eastern Railway the principal articles hauled and have shown great increases each year.

Taking the exports separately, it is found that the exports to Vladivostock greatly predominate. Almost the entire amount is intended for export abroad. Owing to the introduction of the customs tariff for eastern Siberia in the early part of 1909, the shipments of flour fell off greatly, whereas wheat imports, which continued to enter duty free, increased in order to supply the mills in the Maritime Province. The shipments of wheat in 1911 were far below normal on account of the shortage of crops.

COAL, FIREWOOD, AND TIMBER MOVEMENTS

The principal hauling of coal is from the Fushun coal mine of South Manchuria. Formerly this mine was within the area of the Chinese Eastern Railway, and the mine was worked to obtain fuel for the railway, but after the Russo-Japanese War that section of the railway and the coal mine fell into the hands of the Japanese.

The only mine of consequence remaining in the hands of the Chinese Eastern Railway is located at Djalainor to the west of Harbin. This mine is leased by the railway, and produces about 18,000 tons of coal per month, of which 12,000 tons are used by the railway, the remainder being sold to the public.

Practically the only movement of firewood is in local freight. This is due to the fact that after the loss of the Fushun coal mine, the Chinese Eastern Railway was compelled to substitute firewood for coal whenever possible, and as there are numerous forests within the railway area, the cutting of firewood soon developed into an important industry.

The development of the exportation of lumber and timber

from North Manchuria has not been greatly encouraged, and no serious effort to find markets abroad has been made. Prior to the establishment of customhouses and the erection of sawmills in Eastern Siberia, shipments were made from North Manchuria, but these fell off greatly during 1908. This forced the North Manchurian timber merchants to seek new markets, with the result that shipments to South Manchuria and abroad rapidly developed.

CHINESE EASTERN RAILWAY.—The bridge over the Sungari at Harbin.

DISCRIMINATING RATES FAVOR RUSSIAN KEROSENE

Russian kerosene is shipped by sea to Vladivostock, where it is loaded in tank cars for distribution throughout the Russian Far East and North Manchuria. In order to encourage and assist the sale of Russian kerosene in competition with that from other countries, the Chinese Eastern Railway has arranged its freight tariff in such a way as to discriminate against non-Russian kerosene. They are enabled to do this, as foreign kerosene entering Russian territory must pay heavy import duty, as well as an excise tax, and can not be shipped in transit without paying this double toll. For this reason all non-Russian oil must enter North Manchuria from the south via Kwangchengtzu and pay a much higher rate of freight to points in North Manchuria than Russian oil would pay when shipped in the opposite direction. Russian oil may take advantage of the Vladivostock route and is exempt from import duty. In addition to this discrimination in freight rates, the railway has prepared a special tariff from Russian centers to North Manchuria in an effort to hold this market for Russian oil. The amount of American kerosene imported via Kwangchengtzu suddenly increased and passed the Russian importations in 1910, but showed a decrease to the Russian increase in 1911. In spite of the heavy freight handicap, American oil, by its superiority, finds a ready sale, although at times the prices are higher than Russian oil, and the small shipments in transit from the Ussuri to the South Manchuria Railway indicate that with the advantage of low freight rates the Russian oil is unable to compete with American oil in the south. By arrangement, American kerosene in given the North Manchurian market, and has only Russian oil to compete with.

CHINESE EASTERN RAILWAY.—Machine shops at Harbin.

CHINESE EASTERN RAILWAY.—Railway shops at Harbin.

BEEF SHIPMENTS—PIECE GOODS

The shipments of beef and beef products have shown but small fluctuation. Mongolia, with its rich pasture lands and large herds supplies Eastern Siberia with beef, a certain quantity of which passes over the Chinese Eastern Railway to the Maritime Province, but the bulk of the shipments are delivered by river in summer and on the hoof in winter. In 1911 and 1912 the figures show increases, which are accounted for by the crop failures of Western Siberia and the necessity of disposing of live stock, which resulted in transit shipments from the Trans-Baikal Railway to the Ussuri Railway.

Piece goods are principally imported into North Manchuria via Kwangchengtzu, and therefore appear in the railway statistics as imports from the South Manchuria Railway. The railway authorities estimate that 75 per cent. of the imports of dry goods, including piece goods, consist of coarse cotton piece goods. These they divide according to nationality as follows: Chinese, 54 per cent.; Japanese, 30 per cent.; American, 16 per cent.

This estimate appears to be greatly exaggerated in favor of Chinese piece goods, which during the years under review were imported in relatively small quantities. Japanese piece goods should take the first place with over 50 per cent. of the total, whereas American piece goods would represent 30 per cent., and Chinese and British would divide the remainder in the order named. Manufactures of cotton, woollen, and silk make up nearly all of such shipments.

TEA SHIPMENTS IMPORTANT—TRAFFIC AND REVENUE.

Tea shipments take fourth place in volume in the traffic of the Chinese Eastern Railway and provide a large part of the railway's revenue, the rate being the highest on the freight schedule. Tea makes up about95 per cent. of the transit freight handled and provides return freight for the cars used to carry grain to Vladivostock, the other westbound traffic taking only a small portion of the empty cars available at that port. Practically all of this traffic will be lost to the Amur Railway when that line is completed. Prior to the Russo-Japanese War tea shipments came via Dalny. During 1904 and 1905 the war caused complete suspension of this trade, which was revived in 1906. About 72 per cent. of the tea imported into Vladivostock comes from China and the remainder from Ceylon, India, and Java. The imports are about equally divided between brick and leaf tea, consisting in 1910 of 30,982 tons of leaf tea and 28,406 tons of brick tea.

The freight and passenger traffic and gross revenue of the Chinese Eastern Railway in 1911 and 1912 were as follows:—1911: Passengers (including military) 1,208,953, freight 3,465,368

tons, revenue $10,016,540; 1912: passengers (including military) 1,639,288, freight 2,699,224 tons, revenue $11,705,235.

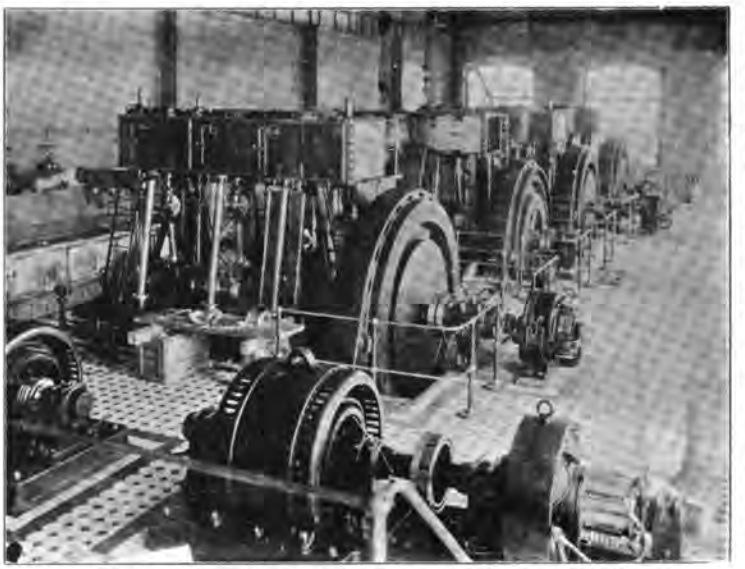
SALT AND SUGAR FREIGHTS.

Salt, which is an important item in the freight of the Chinese Eastern Railway, is principally imported via Vladivostock. In 1906, the amount handled by the railway was large, as the stocks of salt had become greatly depleted during the Russo-Japanese War, and were replenished during that year. The increases in later years are due to the agreement between the Chinese Eastern Railway and the Heilungchiang and Kirin provincial officials to deliver salt to the Chinese salt monopoly via the port of Vladivostock.

Prior to the building of a sugar factory at Ashiho, North Manchuria depended upon European Russia for sugar, and the principal imports were direct by rail and by sea through Vladivostock. The shipments by sea could be laid down much cheaper, and this brought the rail importations practically to an end in 1909. The consuming power, however, greatly increased, and although a sugar factory was started, it was nevertheless found possible to import Hongkong and Chinese sugar via the South Manchuria Railway, and these importations have gradually increased.

The imports of Russian sugar were 3,187 tons in 1908, 6,146 tons in 1909, 2,396 tons in 1910, and 2,409 tons in 1911. Those of Hongkong sugar totaled 5,240 tons in 1908, 8,461 tons in 1909, 7,274 tons in 1910, and 10,459 tons in 1911.

A Street in Harbin.



Electric Light and Power Station at Harbin. The Generating Room.

OIL-TIN FACTORY IN MANCHURIA

An oil-tin factory has been established at Dairen by the Manchuria Manufacturing Co. for manufacturing cans in which to export oils. It is an unincorporated partnership concern, composed of two Americans and one Russian. The present plant employs 1 Japanese as chief engineer and 17 Chinese in the factory and operates by electric motor 8 can-making machines purchased at Mount Vernon, N. Y. Its capacity is 45,000 cans per month, which will be increased to 90,000 cans per month when the size of the plant is doubled, as is planned, in May, 1914.

The product consists of the standard size and shape kerosene can and is being sold at 12½ cents (U. S. currency) each. At present the cost of producing one tin can not be definitely stated, but it is estimated that with the doubled plant running at full capacity without interruption the cost per unit should be 8 per cent. less than the present selling price. The tins are for the most part sold in Dairen.

The raw materials, consisting of tin, tin plate, galvanized wire, lead, and acid, are imported from Europe.

The factory was designed primarily to supply exporters of soyabean oil with a new, clean, and convenient package for such oil. Exporters have heretofore been using second-hand tins, drums, and barrels—the last two not being so popular as the tins—in which most of the oil from Dairen is shipped. Owing to the cheapness of second-hand tins, considerable difficulty is being found in introducing the new container, but the company hopes eventually to be able to replace the old tins by the new. The factors in favor of the latter are: The supply can be made constant, prices can be steadily maintained, large stocks of new tins can always be available for rush orders, leakage is avoided to a greater extent, and the contents of the new are cleaner and in better condition generally than oil in second-hand tins.

As bean oil exports from Dairen are increasing the prospects of success are good.

Typical Street scene in Harbin.

It is reported that the Chinese Government will appoint Commercial Attachés to the Ministries in Berlin, London, Paris, St. Petersburg, Washington and Tokyo.

The *Shuntien Shih Pao*, a Peking papers reports that American capitalists have proposed, that the Government should establish ironworks at Hanyang for the purpose of exporting pigiron to America.

FAR EASTERN RAILWAYS

CHINA

Shantung Railway.—A Berlin telegram dated May 18 states that the Shantung Railway receipts in 1913 amounted to Mks. 4,130,000 and the expenses to Mks. 1,190,000, as compared with Mks. 4,130,000 and Mks. 1,170,000 respectively in 1912. The car agreement with the Tientsin-Pukow Railway has been successful and furthered the production of coal, which amounted to 612,201 tons in 1913 against 413,033 in 1912. The prospects of the sale of coal are as favourable as they were last year.

Peking-Hankow Line.—A German telegram says:—The main points of the draft of the second loan which the Ministry of Communication is said to have closed for the Peking-Hankow Railway with American, English and other European capitalists, as follows: The amount of the loan is twenty million dollars in bonds of one hundred dollars each. Interest is paid at seven per cent. It runs for twenty years. Amortization will be commenced from the eleventh year. The income of the railway is pledged as security for the loan.

Hangchow-Ningpo Railway.—The Chinese newspapers report that the Ministry of Communications has decided to erect a bridge across the West Lake at Hangchow in order to join the lines of the Hangchow and Ningpo railways. According to an estimate the cost will be $500,000 and the bridge will be completed in eight months. The shareholders of the Chekiang Railway Company will hold another meeting on June 5 to discuss the matter of redeeming the property of the company by the Central Government. The Ministry of Communications has already appointed a deputy to manage the business of the company. The contract for the construction of the iron bridge will be signed shortly.

Yuet-Han Railway.—At a recent meeting of the Shareholders of the Yuet-Han Railway (the Kwangtung section of the Canton-Hankow Railway) the election was held to select a Managing Director of the line. Mr. Liang Ching-kwai secured the position with 60,000 votes, Mr. Jeme Tien-yu having the second highest number. Mr. Liang Ching-kwai therefore becomes the new Managing Director.

Shanghai Nanking-Railway.—The following figures of traffic returns (approximately) for the week ended April 18 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	54,387	12,889	67,276
1913....	52,005	11,977	63,982
Increase.	2,382	912	3,294
Decrease	—	—	—

For forty-two weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,025,220	426,009	2,451,229
1913....	1,809,648	359,025	2,204,673
Increase.	215,572	30,984	246,556
Decrease	—	—	—

Week ended April 25.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	49,633	12,029	61,662
1913....	43,716	10,119	53,835
Increase.	5,917	1,910	7,827
Decrease	—	—	—

For forty-three weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,074,853	438,038	2,512,891
1913....	1,853,364	405,144	2,258,508
Increase	221,489	32,894	254,383
Decrease	—	—	—

Week ended May 2.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	48,334	9,085	57,419
1913....	44,446	10,359	54,805
Increase.	3,888	—	2,614
Decrease	—	1,274	—

For forty-four weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,123,187	447,123	2,570,310
1913....	1,897,810	415,503	2,313,313
Increase.	225,377	31,620	256,997
Decrease	—	—	—

Week ended May 9.

Year.	Passengers.	Goods & Sundries.	Total for the week.
	$	$	$
1914....	54,479	11,778	66,257
1913....	52,626	9,302	61,928
Increase.	1,853	2,476	4,329
Decrease	—	—	—

For forty-five weeks.

Year.	Passengers.	Goods & Sundries.	Total.
	$	$	$
1914....	2,177,666	458,901	2,636,567
1913....	1,950,436	424,805	2,375,241
Increase.	227,230	34,096	261,326
Decrease	—	—	—

Week ended May 16.

Year.	Passengers.	Goods & Sundries	Total for the week.
	$	$	$
1914....	49,715	11,851	61,566
1913....	48,356	9,456	57,812
Increase.	1,359	2,395	3,754
Decrease	—	—	—

For forty-six weeks.

Year.	Passengers.	Goods & Sundries	Total
	$	$	$
1914....	2,227,381	470,752	2,698,133
1913....	1,908,702	434,261	2,433,053
Increase.	228,580	36,491	265,080
Decrease	—	—	—

JAPAN

Railway Construction Plans.—How far the railway construction programme is to be carried out during the current fiscal year is still a pending question in the Imperial Railway Board as the Board changed its chief while negotiations as to the means and ways of railway financing during the current year were still pending between the Board and the Finance Department. If the original plan of the Board is to be carried out without being modified as a result of the negotiations with the Finance authorities, lines with a total mileage of 223 miles 75 chains will be completed during the year.

Details are as follows:

Lines	Sections	Mileage.	Date of C'pletion.
Hokkaido Yubutsu	Rubeshibe-Shimoutabara	19.40	Sept. 1914
Hokkaido Soya	Onishibu-Kotombetsu	9.59	Oct. 1914
Hokkaido Manji	Shibun-Manji	14.70	Nov. 1914
Shinjo Furukuchi-Kiyokawa		8.59	June 1914
Shinjo Kiyokawa-Awarume		7.34	Aug. 1914
Shinjo	Awarume-Sakata...	9.15	Dec. 1914
Taira	Koiiyama-Miharu ...	7.65	Aug. 1914
Taira	Taira-Onoshinmachi	20.69	Feb. 1915
Taira	Taira-Nishiogawa ...	6.18	Feb. 1915
Murakami ...	Shibata-Chujo	8.10	June 1914
Murakami	Chujo-Murakami	12.50	Nov. 1914
Ganyetsu	Nozawa-Tsugawa	15.79	Oct. 1914
Miyazaki ...	Mitsumata-Yawanokuchi	3.37	Aug. 1914
Miyazaki ...	Miyazaki-Akaye	1.94	Jan. 1915
Miyazaki ...	Akaye-Kiyotake	3.22	Jan. 1915
Sendai ...	Kushikino-Sendai	7.33	June 1914
Hojo	Kisarazu-Minato ...	13.48	Jan. 1915
Miyachi (light)	Kumamoto-Otsu	12.76	June 1914
Nagai (light)	Nashigo-Nagai	7.11	Oct. 1914
Fukagawa (light)	Nita-Wakimoto	5.22	Oct. 1914
Total		196.64	

To this total are to be added those lines already completed and opened to traffic.

They are:—

Lines	Sections	Mileage.	Date of C'pletion.
Sayegi	Oita-Yozaki	11.33	April 1
Inukai	Oita-Nakahanda ...	6.79	April 1
Shinjo	Iwade-Kawawatari	8.62	April 19

The construction expenses of these lines are estimated at 1,300,000 *yen*.

Between Japan and China.—In October last, the Japanese Imperial Government Railways opened a through traffic arrangement between Japan and China by rail via Korea, and have since been operating the through booking of passengers and luggage from principal stations on the Tokaido, Sanyo, and Kyushu Lines to Peking and Tientsin, and *vice versa*. On account of the improvements introduced to the train services on the Korean, the South Manchuria, and the Chinese Peking-Mukden Line on May 1st, the through connections have been increased and the length of journeys shortened, to the immense advantage of through passengers. Formerly, when proceeding by daily connections from Japan to China, passengers have had to stop overnight at Mukden and Shanhaikuan, spending 5 days 4 hours on the journey from Tokyo to Peking, but now a stop-over is necessary only at Shanhaikuan, thus shortening the time spent to just over four days. Furthermore, up to the present month through connections necessitated a stop-over at Mukden and were once weekly, while according to the new timetable, through services are thrice weekly and without any stop-over *en route*, as follows:—

LEAVE.					
Shimbashi	Tues. & Sat.	8.30 a.m.	Tues.	3.50 p.m.	
Hiranuma	,, ,,	9.06 ,,	,,	4.36 ,,	
Osaka	,, ,,	8.33 p.m.	Wed.	6.38 a.m.	
Kobe	,, ,,	9.22 ,,	,,	7.32 ,,	
ARRIVE.					
Tientsin	Sat. & Wed.	5.03 a.m.	Sat.	6.41 p.m.	
Peking	,, ,,	8.45 ,,	,,	9.13 ,,	

Shikizan Cable Railway Co.—A charter has been granted by the State Railway Board to the Shikizan Cable Railway Company for the construction of a cable railroad between Sano and Tochino, Ikomagun, Naraken. The proposed line will be 1 mile and 29 chains in length and will cost 200,000 *yen*.

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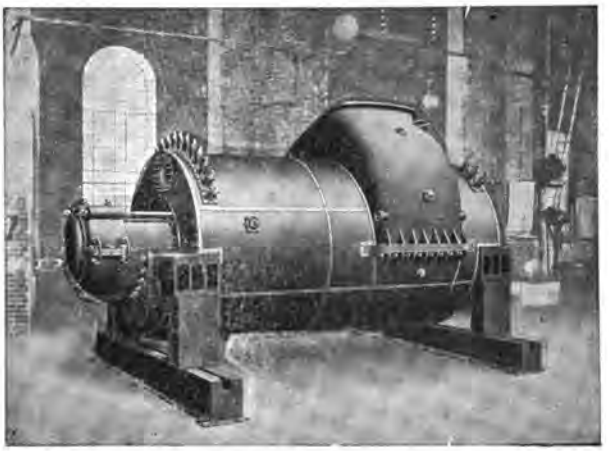
Specialize in Diesel Engines; Steam Turbines and Steam Engines.



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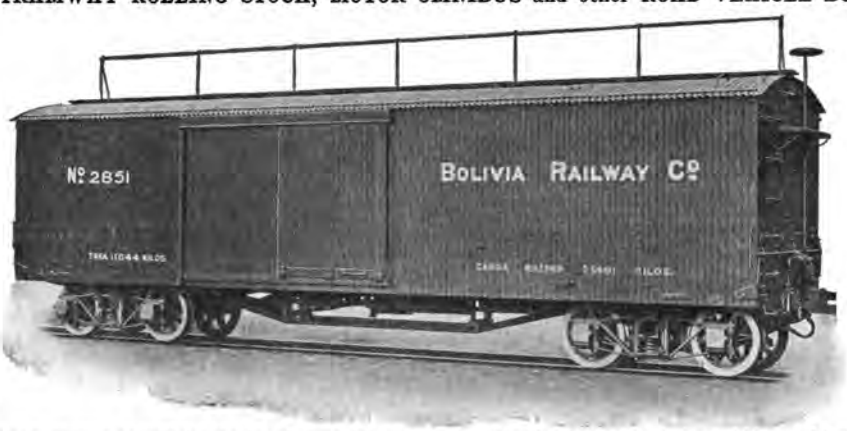

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Cable Codes: Bentleys Complete Phrase Code; Western Union, A. B. C. 5th Edition, and Liebers Standard Telegraphic Code.

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CHINESE GOVERNMENT RAILWAYS

TIENTSIN-PUKOW LINE

TIME TABLE

1st May, 1914 and until further notice

DOWN TRAINS				STATIONS		UP TRAINS			
DAILY			SATURDAYS ONLY			MONDAYS ONLY	DAILY		
MIXED		MAIL	EXPRESS			EXPRESS	MAIL	MIXED	
		A.M. 9.40	P.M. 7.30	dep.	Tientsin East	arr.	10.55	3.37	
	A.M. 5.15	9.50 10.10	7.40 7.55	arr. / dep.	Tientsin Central	dep. / arr.	10.45 10.35	3.27 3.07	9.16
	9.45	P.M. 1.43	10.48	dep.	Tsangchow	dep.	8.00	12.01	4 53
	P.M. 1.52	4.52	A.M. 1.27	dep.	Techow	dep.	5.37	P.M. 9.15	12.28
A.M. 7.10	5.59	7.41 8.01	3.59 4.09	arr. / dep.	Tsinanfu	dep. / arr.	3.12 3.02	6.30 6.10	P.M. 8.30 A.M. 6.30
9.59		10.38	6.23	dep.	Taianfu	dep.	1.08	3.53	3.48
P.M. 12.50		A.M. 1.29	8.36	dep.	Yenchowfu	dep.	P.M. 11.04	1.15	1.02
3.56		4.48	10.54	dep.	Lincheng	dep.	8.46	A.M. 10.11	P.M. 9.46
6.12	1.45	6.56 7.16	P.M. 12.30 12.40	arr. / dep.	Hsuchowfu	dep. / arr.	7.02 6.52	7.54 7.34	7.20 11.25
A.M. 5.45	7.14	11.20 11.30	4.10 4.20	arr. / dep.	Pengpu	dep. / arr.	2.33 2.23	3.01 2.51	6.05 A.M. 8.48
10.20		P.M. 3.10	7.39	dep.	Chuchow	dep.	A.M. 10.45	P.M. 11.20	4.13
P.M. 12.03		4.30	9.04	arr.	Pukow	dep.	9.10 P.M.	9.50 A.M.	2.20 P.M.

Read Upwards.

Yenchowfu-Tsiningchow Branch			Lincheng-Tsochuang Branch				
Daily	STATIONS	Daily	Daily		STATIONS	Daily	
P.M. 2.30 dep.	Yenchowfu	arr. 12.02 P.M.	A.M. 11.20 P.M.	P.M. 5.50 dep.	Lincheng	arr. 8.08	2.38
3.33 arr.	Tsiningchow	dep. 11.00 A.M.	12.28	6.58 arr.	Tsochuang	dep. 7.00 A.M.	1.30 P.M.

NOTE: Express Trains with Dining, Sleeping, 1st and 2nd class cars are operated from Tientsin to Pukow on Saturdays and vice versa on Mondays. One 3rd class car is attached to each train only for use of passengers' servants, if any.

Sleeping Accommodation may be reserved on application to the Traffic Manager, Head Office, Tientsin or to the Chief Traffic Inspector, Tsinanfu or Pukow. It is highly advisable to apply for reservation at the earliest possible date in order to prevent disappointment.

In addition to 1st class fares, an extra fee of $5.00 will be charged for each berth on the Express Service.

By Order,

Tientsin, 1st May, 1914. The Traffic Manager.

TRAIN DE LUXE AT TIENTSIN SETTLEMENT STATION

CHINESE GOVERNMENT RAILWAYS OF NORTH CHINA

THROUGH SERVICE FROM PEKING TO MUKDEN, CONNECTING AT MUKDEN WITH THE SOUTH MANCHURIA EXPRESS FROM TRANS-SIBERIAN ROUTE: AT PEKING CONNECTION IS MADE WITH THE PEKING-HANKOW RAILWAY FOR HANKOW AND YANGTSZE PORTS, AND INTERMEDIATE POINTS REACHED BY THE CHEN-TAI LINE TO TAIYUANFU, THE TAO-CHING LINE, AND THE PEINLO RAILWAY TO KAIFENGFU AND HONANFU. CONNECTION IS ALSO MADE AT PEKING WITH THE PICTURESQUE KALGAN LINE, "THE ROAD TO THE GREAT WALL."

THE RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

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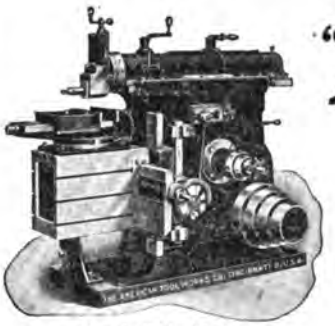
THE THROUGH TRAINS ARE EQUIPPED WITH BUFFET AND DINING CAR SERVICE, AND A COMFORTABLE, MODERN TRAIN DE LUXE OF COMPARTMENT SLEEPING COACHES HAS BEEN PLACED IN OPERATION THIS SEASON TO CONNECT WITH THE THROUGH SERVICE OF THE TRANS-SIBERIAN AND SOUTH MANCHURIAN RAILWAYS

For further information apply to any office in America or Europe of

The Cie. Internationale Des Wagons-Lits, Thos. Cook & Sons, or Railways of North China

TIENTSIN, NORTH CHINA
By order of Directorate



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2 ft. to 7 ft. Arms.

Designed to fulfill the most advanced ideas of shop practice.

All tools arranged for either Belt or Electric Motor Drive.

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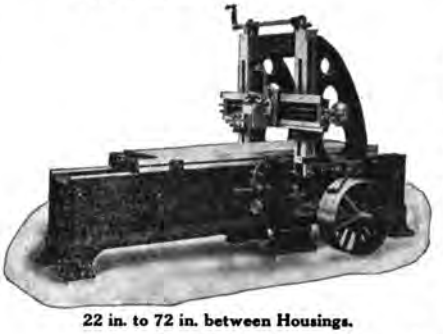
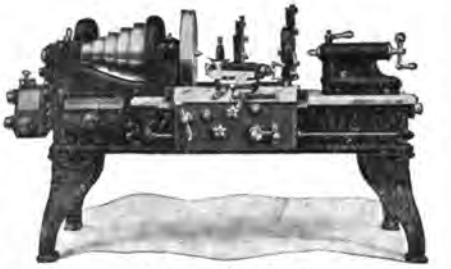


22 in. to 72 in. between Housings.



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CHINESE GOVERNMENT RAILWAYS

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This line passes through the Heart of the Country and enables the traveller to and from Europe to catch a glimpse of Old China. Ancient walled cities, temples and pagodas are seen from the comfortable seats of the weekly trains de luxe operated by this line. From Peking, the great capital of the oldest civilization in the world, the train departs from the famous Chien-Men and carries the traveller through the historical and legendary portions of the Country, to the modern industrial center at Hankow—the Chicago of China. Connections are made with the Cheng-Tai Railway at Chengtingfu, with the Tao-Ching Line at Sin Siang-sien, and at Chengchowfu with the Pienlo Line.

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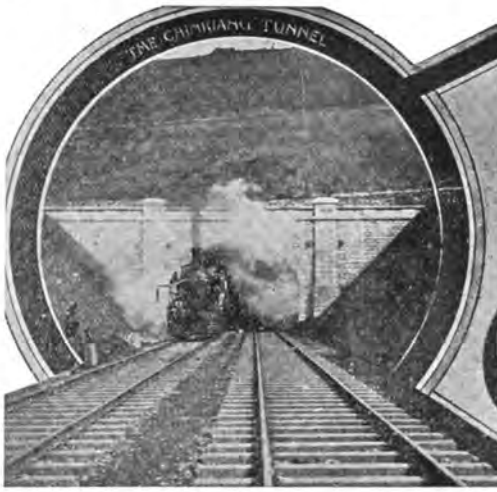

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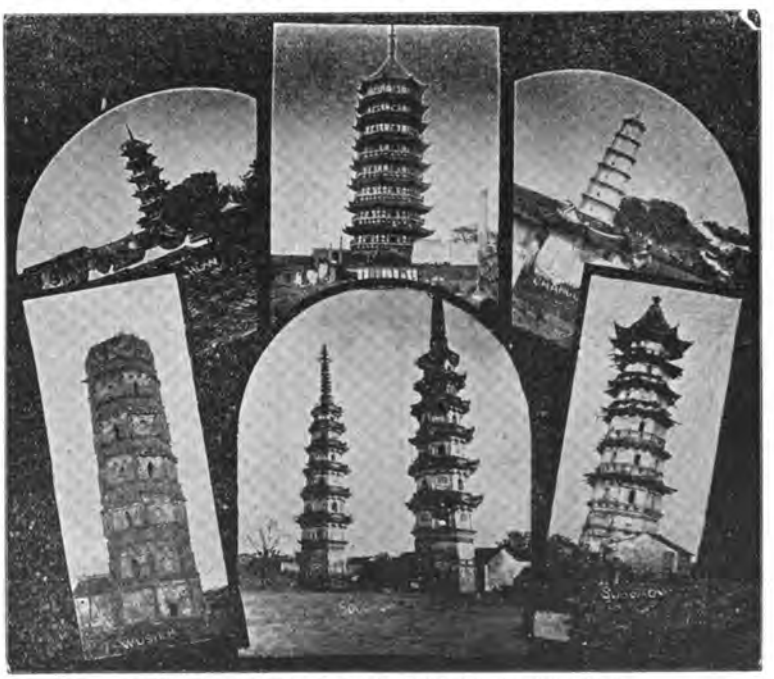

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SOME OF THE PAGODAS ALONG THE LINE OF THE S. N. R.

SHORTEST, QUICKEST, AND CHEAPEST ROUTE BETWEEN THE FAR EAST AND EUROPE

THE SOUTH MANCHURIA EXPRESS

Shanghai to London	in	13½	days
Tokio	„ „	13¼	„
„	„ Peking „	3½	„
Dairen	„ Moscow „	8¾	„

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THRICE WEEKLY EXPRESS TRAINS.—Composed of excellently equipped SLEEPING, DINING, and 1st CLASS CARS. Operated between DAIREN and CHANGCHUN in connection with the TRANS-SIBERIAN ROUTE and SHANGHAI MAIL STEAMERS.

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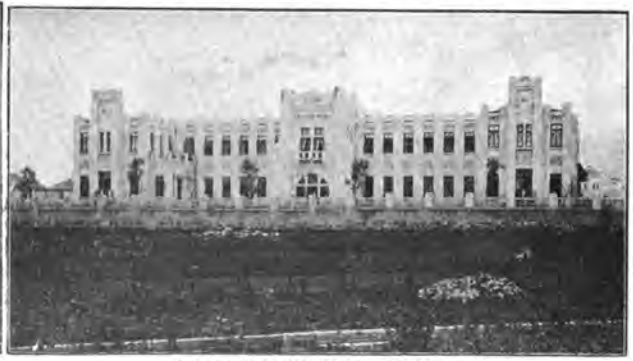
S. M. R. YAMATO HOTEL, MUKDEN



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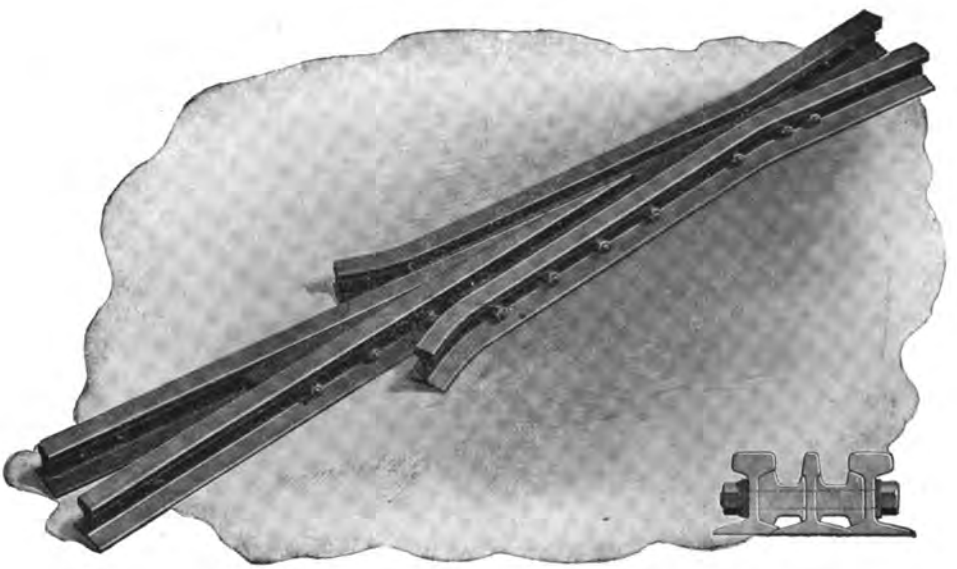

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Excellent 1st and 2nd Class Sleeping and Dining Cars are taken. Connections:—

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TO TOKYO VIA CHOSEN

FROM		
Mukden	2½	days
Changchun	3	,,
Peking	4	,,
Moscow	11	,,
Berlin	12½	,,
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Two Express Trains run daily between Fusan and Antung, and connect with the Fusan-Shimonoseki Ferry Service.

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THE TRAINS OF THIS LINE CONNECT AT SIN-SIANG-SIEN WITH THE THROUGH SERVICE OF THE PEKING-HANKOW RAILWAY. IT TAPS THE GREAT ANTHRACITE COAL DEPOSITS OF SHANSI, AND CONVEYS THE PRODUCTS OF THE MINES TO THE NEAREST NAVIGABLE RIVER.

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The line connects with the through service of the Peking-Hankow Railway at Tcheng Tchéou, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

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Builders of all Classes Motive Power. Capacity 720 to 1,000 per year

Heavy Pacific Type Built for Erie Railroad

LIMA HEAVY PACIFIC TYPE

This locomotive combines the latest improvements and developments in design, materials and economic devices for saving fuel, etc.

Built for the **ERIE RAILROAD** for heavy fast passenger service where maximum capacity was desired.

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Cylinders, 27 × 28 inches	Weight on drivers, 176,000 lbs.
Driving wheel base, 14 ft.	Total Weight, 287,000 lbs.
Total Wheel base, 36 ft. 2 inches	Tractive Power, 40,700 lbs.
Drivers, diameter 79 inches	Factor Adhesion, 4.24
Boiler, straight locomotive type	Superheater, Schmidt
Boiler, diameter 79 inches	Valve motion, Baker

Our **PLANT** is equipped with the latest and most improved machinery, which enables us to build any type or size locomotive required.

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中華民國政府吉長鐵路行車時刻表

CHINSE GOVERNMENT RAILWAYS KIRIN-CHANGCHUN LINE.

TIME TABLE.

STATIONS.		DOWN TRAINS. Daily. Mixed.	DOWN TRAINS. Daily. Mail.	STATIONS.		UP TRAINS. Daily. Mail.	UP TRAINS. Daily. Mixed.
TOUTAOKOU	dept.	**2.20**	7.30	KIRIN	dept.	**2.25**	7.05
CHANGCHUN	arr.	**2.32**	7.42	KIUCHAN	arr.	**2.43**	7.23
	dept.	**2.42**	7.50		dept.	**2.45**	7.28
KALUN	arr.	**3.14**	8.19	KUTIENTZE	arr.		7.42
	dept.	**3.19**	8.22		dept.	**3.00**	7.43
YINMAHO	arr.	**3.46**	8.47	HUAPICHANG	arr.	**3.14**	7.57
	dept.	**3.51**	8.49		dept.	**3.16**	8.02
HSIACHIUTAI	arr.	**4.05**	9.02	CHAOCHIATIEN	arr.		
	dept.	**4.10**	9.04		dept.	**3.39**	8.25
YINGCHENGTZE	arr.	**4.21**	9.14	TUMENLING	arr.	**3.54**	8.41
	dept.	**4.27**	9.16		dept.	**4.04**	8.51
TUMENLING	arr.	**4.50**	9.39	YINGCHENGTZE	arr.	**4.26**	9.12
	dept.	**5.00**	9.49		dept.	**4.28**	9.17
CHAOCHIATIEN	arr.			HSIACHIUTAI	arr.	**4.38**	9.28
	dept.	**5.16**	10.04		dept.	**4.40**	9.30
HUAPICHANG	arr.	**5.38**	10.24	YINMAHO	arr.	**4.53**	9.44
	dept.	**5.43**	10.26		dept.	**4.55**	9.46
KUTIENTZE	arr.			KALUN	arr.	**5.21**	10.14
	dept.	**5.58**	10.40		dept.	**5.23**	10.16
KIUCHAN	arr.	**6.13**	10.55	CHANGCHUN	arr.	**5.51**	10.46
	dept.	**6.18**	10.57		dept.	**5.57**	10.52
KIRIN	arr.	**6.38**	11.15	TOUTAOKOU	arr.	**6.10**	11.05

NOTICE:—"dept."=Departure. "arr."=Arrival. Light type figures=A.M. time. Heavy type figures=P.M. time.
1st May, 1914, and until further notice.

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Consolidation Type Locomotives

Locomotives of the Consolidation (2-8-0) type have been in use since 1866. These engines, with nearly 90 per cent. of the total weight available for adhesion, are specially suitable for heavy freight service. In the larger sizes the firebox is usually placed above the driving-wheels in order to secure sufficient grate area.

CONSOLIDATION TYPE LOCOMOTIVE, PENNSYLVANIA R. R.

Cylinders, 25″×28″	Water heating surface, 3,049 sq. ft.
Driving-wheels, diameter 62″	Superheating surface, 623 sq. ft.
Steam Pressure, 205 lbs.	Weight on driving-wheels, 213,700 lbs.
Grate Area, 55 sq. ft.	Weight, total engine, 244,800 lbs.

Tractive Force, 49,200 lbs.

The Consolidation engine illustrated in one of 194 locomotives recently built by The Baldwin Locomotive Works for the Pennsylvania R. R. These locomotives, with driving-wheels 62″ in diameter, are suitable either for slow-speed work on heavy grades, or for service in level districts where higher speeds are attained. The boiler has a superheater and brick arch. The Walschaerts valve motion is applied, and the gears are controlled by a screw reverse mechanism.

Heavy locomotives, properly designed for the work to be done, and equipped with fuel saving devices, effect important economies in the cost of railway operation.

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Agents for Japan:—SALE & FRAZAR, Ltd., TOKYO.

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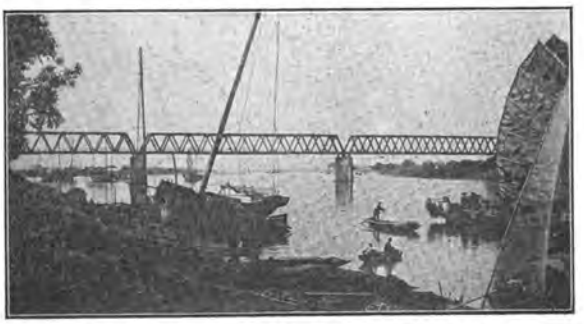

EAST RIVER BRIDGE CANTON-KOWLOON RAILWAY

SUMMER SEASON 1913.

Leave Hongkong (Kowloon)	7.15 a.m. 3.00 p.m.	Leave Canton (Tai Sha Tou)	7.00 a.m. 3.15 p.m.
Arrive Canton (Tai Sha Tou)	11.00 a.m. 6.41 p.m.	Arrive Hongkong (Kowloon)	10.43 a.m. 6.54 p.m.

Special terms and special trains for large tourist parties. For further particulars see advertisements or apply to
The Manager (British Section) Kowloon, HONGKONG. The Administration, (Chinese Section) CANTON.

Chinese Government Railways

The Cheng-Tai Railway

(CHINESE GOVERNMENT SHANSI LINE—CHENGTINGFU TO TAIYUANFU)

VIEWS ALONG ROUTE OF CHENG-TAI RAILWAY

The trains of this line connect with the through service of the Peking-Hankow Railway, affording Travellers the opportunity of seeing the most picturesque part of China. The line passes through a mountainous section of country, rich in Mineral Resources to the Provincial Capital of Shansi at Taiyuanfu. This interesting city is a great educational center, and famous for the fine quality of its artistic embroideries.

The Peking-Kalgan Line

"THE ROAD TO THE GREAT WALL"

This line follows the ancient caravan route and military highway from Mongolia into China by the way of the historic Nankow Pass. This pass is the Key to Peking, and Kalgan is the gate of the Country. From here the great camel caravans set out on their long journeys across Mongolia to Siberia and Central Asia. This old frontier mart, retaining its time-honored characteristics, one of the most interesting sights of the Old World, is made accessible by the new railway. The line also carries the passenger in two hours from Peking to Nankow, when the Great Wall of China and the Ming Tombs may be seen. A foreign hotel is operated by the railway authorities at Nankow, where chairs and guides may be secured for the Tombs.

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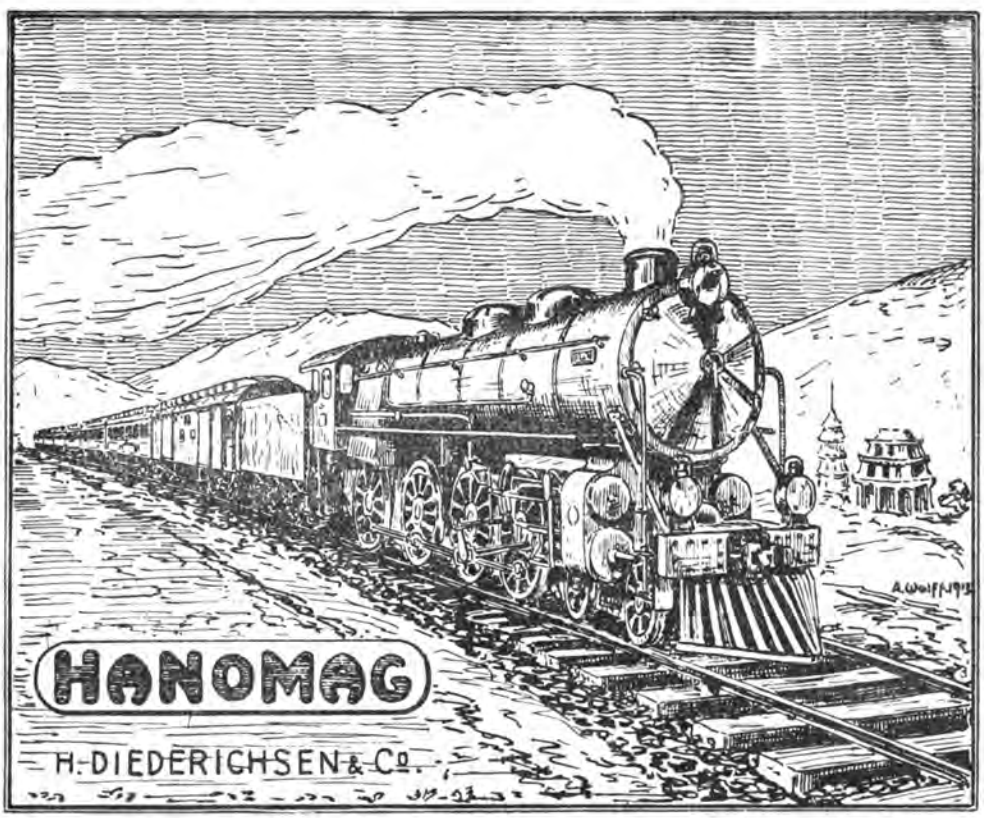

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CHINESE GOVERNMENT RAILWAYS

TIENTSIN-PUKOW LINE

Express Passenger Train Service

STATION AT LIU HUAI KUAN

STATION AT PENG-PU

TIENTSIN-PUKOW RAILWAY. BRITISH OR SOUTHERN SECTION

Notice is hereby given that through express service of first, second and third classes with dining and sleeping cars from Tientsin to Pukow has been inaugurated on December 4th, 1912, and until further notice. These trains will leave Pukow on Mondays, and Tientsin, on Saturdays, stopping only at the principal stations en route.

TIME TABLE

Up Train Stations		Mondays only	Daily Through Mail Service	Down Train Stations		Saturdays only	Daily Through Mail Service
Pukow	dep.	9.10	9.50	Tientsin East	dep.	7.30	9.40
Hsuchowfu	,,	7.02	7.54	Tientsin Cen.	arr.	7.40	9.50
Tsinanfu	,,	3.12	6,30	Tientsin Cen.	dep.	7.55	10.10
Techow	,,	5.37	9.15	Techow	,,	1.27	4.52
Tientsin Cen.	arr.	10.35	3.07	Tsinanfu	,,	4.09	8.01
Tientsin Cen.	dep.	10.45	3.27	Hsuchowfu	,,	12.40	7.16
Tientsin East	arr.	10.55	3.37	Pukow	arr.	9.40	4.30

	Departure			*Arrival*	
Monday	**Pukow**	**9.50 P.M.**	**Tuesday**	**Tientsin**	**10.55 A.M.**
Saturday	**Tientsin**	**7.30 P.M.**	**Sunday**	**Pukow**	**9.04 P.M.**

EXPRESS FARE TABLES

1st class

PUKOW-HSUCHOWFU	HSUCHOWFU-TSINANFU	TSINANFU-TIENTSIN
$13.90	**$13.60**	**$14.60**

2nd class

PUKOW-HSUCHOWFU	HSUCHOWFU-TSINANFU	TSINANFU-TIENTSIN
$9.30	**$9.05**	**$9.70**

3rd class

PUKOW-HSUCHOWFU	HSUCHOWFU-TSINANFU	TSINANFU-TIENTSIN
$4.65	**$4.50**	**$4.90**

LUGGAGE ALLOWANCE

1st class, 120 catties; 2nd class, 90 catties; 3rd class, 60 catties.

Excess luggage is charged at one (1) cent per picul per mile, minimum charge as for 50 catties.

Only first class passengers are entitled to book sleeping berths, at $5.00 per berth.

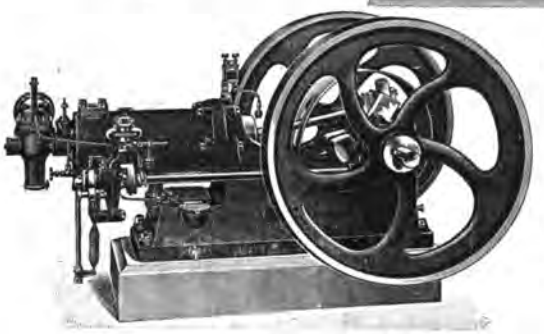
The Railway ferry steam-launch, lying at the jetty above the Japanese Hulk, will carry passengers across the river forty minutes before the trains leave. Passengers may book their tickets at the office on the ferry jetty.

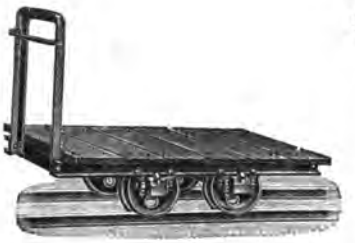
The through mail, and the mixed trains running between Pukow-Pengpu, Pengpu-Hsuchowfu, Hsuchowfu-Tsinanfu, and Tsinanfu-Tientsin will continue as before. For time refer to the Time Table.

For further particulars, etc., apply to the Traffic Department at Tientsin or Branch Office, Nanking.

WESTERN ELECTRIC EQUIPMENT

BALDWIN LOCOMOTIVES





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The Road Through the Country of Confucius

The country traversed by this line is thought by many to be the most picturesque to be found in China. The length of the main line from Tsingtau to Tsinanfu is 400 km. and the length of the Poschan branch is 40 km. There are in addition branches to Hungschan, the Hsiau-ching-ho Canal and the Yellow River.

A lovely view is afforded of Kiauchou Bay as the train leaves Tsingtau.

Thereafter magnificent and diversified scenery is encountered and innumerable places of historical interest are traversed.

Interior of Dining Car

Facilities are afforded for through tickets carrying the passenger over the Tientsin-Pukow Line, giving a good connection with Express trains from and to Europe.

Tickets for the Shantung Railway can be obtained at the Agencies of Thos. Cook & Co., Ltd., The International Sleeping Car Co., and the Nordisk Resebüreau in Asia and Europe.

Traffic is running from the Shantung Railway to the Tientsin-Pukow Railway and vice versa without changing cars at Tsinanfu.

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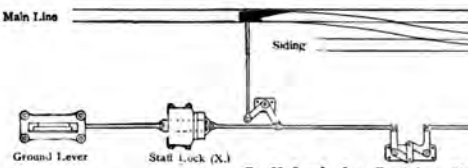

Staff Lock for Outlying Siding.

When a train is required to enter or leave an outlying siding the staff is placed in the top slide of the lock, which is then pushed in.
The lower slide, which is attached to the ground lever, is released, thus allowing the ground lever to be operated.
When the points are set for the siding the train staff is securely locked in the box.

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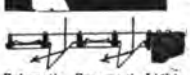

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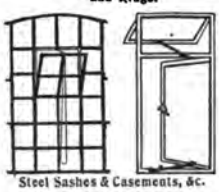

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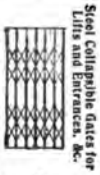

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